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July 2016

Proposed Resource Management Plan
and Final Environmental Impact Statement
Volume 2: Chapters 4-5

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Eastern Interior Field Office, Alaska



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BLM Cover Photos:

1. Alpenglow on the White Mountains, Beaver Creek Wild and Scenic River, Alaska.
2. Steele Creek Roadhouse, Fortymile Wild and Scenic River, Alaska.
3. Dall Sheep at mineral lick near Lime Peak, White Mountains National Recreation Area, Alaska.
4. Mining operation on Walker Fork in Fortymile mining district, Alaska.

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Eastern Interior

Proposed Resource Management Plan and Final Environmental Impact Statement

Volume 2

Chapter 4: Environmental Consequences

Chapter 5: Consultation and Coordination

Prepared by the

U.S. Department of the Interior
Bureau of Land Management-Alaska
Eastern Interior Field Office

July 2016

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Chapter 4

**Environmental
Consequences**

4.1. How to Read This Chapter

Chapter 4 presents the potential impacts to the natural and human environment in terms of environmental, social, and economic consequences that are projected to occur from implementing the alternatives presented in Chapter 2. Chapter 4 contains the following main sections:

- 4.2 Introduction
- 4.3 Impacts Common to all Subunits
- 4.4 Impacts Specific to the Fortymile Subunit
- 4.5 Impacts Specific to the Steese Subunit
- 4.6 Impacts Specific to the Upper Black River Subunit
- 4.7 Impacts Specific to the White Mountains Subunit

The Introduction section includes analysis assumptions, defines the types of effects that will be projected throughout the impact sections, and discusses the availability of data and BLM's cumulative effects analysis.

The section "Impacts Common to all Subunits" and the four sections describing impacts specific to each of the different subunits are broken down by resource or resource use. The order of these sections does not reflect their level of importance. In some instances, a discussion of the environmental consequences for a given subject may be addressed completely under a description of Impacts Common to All Alternatives, in which case there will be no further enumeration. Where there are impacts that vary between alternatives, these are broken down by alternative.

During analysis, each resource specialist considered management activities resulting from the following programs: Air, Cave and Karst, Cultural and Paleontological, Fish and Aquatic Species, Non-Native Invasive Species, Soils, Special Status Species, Vegetative Communities, Visual Resource Management, Water, Wilderness Characteristics, Wildland Fire, Wildlife, Forest and Woodland Products, Lands and Realty, Renewable Energy, Minerals, Recreation, Travel Management, Special Designations (including Areas of Critical Environmental Concern and Wild and Scenic Rivers), Social and Economic Conditions, and Subsistence. If no impacts were identified the programs are not discussed further. In cases where impacts may potentially occur, the impacting resource or resource use is discussed in more detail.

Standard operating procedures resulting from federal laws, regulations, and policies would continue to be followed under all alternatives. These standard operating procedures constitute day-to-day implementation of policy and management, and may result in certain projects being mitigated, redesigned, or dropped from consideration. Since standard operating procedures (SOPs) and Fluid Mineral Leasing Stipulations have been included in Alternatives B, C, D, and E as design features, many impacts are reduced or eliminated up front.

4.2. Introduction

4.2.1. Analytical Assumptions

Assumptions were made to facilitate the analysis of impacts. These assumptions set guidelines and provide reasonably foreseeable projected levels of development that would occur on BLM-managed lands during the life of the plan. These assumptions should not be interpreted as

constraining or redefining the management objectives and actions proposed for each alternative and described in Chapter 2.

Placer mining is projected to be the largest industry in the planning area. Placer mining activities were separated into four categories for analysis: Exploration, Suction Dredging, Small Placer Mine Operations, and Large Placer Mine Operations. Many of the attributes that dictate the size, cost, efficiency, fuel usage, and impacts of the four mining categories were derived from a Reasonable Foreseeable Development – Mine Cost and Impact Model report (2009) authored by Scott Stebbins, Mining Engineer with Aventurine Engineering, Inc. These attributes were assumed to be representative of the industry. Mr. Stebbins has extensive experience developing mining cost estimations and is considered an expert in the field.

The BLM Greenhouse Gas and Climate Change 2015 NEPA Toolkit (<http://ghgtoolkit.blm.gov/>) was the primary tool used in analyzing GHG emissions from current and projected placer-mine operations in the planning area. The toolkit is a comprehensive tool and resource designed for use by BLM resource specialists to estimate total annual greenhouse gas emissions and output summary reports for documentation of reference data and computations. The estimate level of GHG emissions are assumed to be a reasonable proxy for assessing potential climate change impacts, and provide decision makers and the public with useful information for a reasoned choice among alternatives.

Specific data on greenhouse gas emissions from wildfire in the planning area was unavailable due to a lack of detailed vegetation inventory information and associated historic burn severity inventory. While general statewide emissions estimates from the past for Alaska are available (ADEC 2015), more refined, higher resolution estimates for wildfire emissions specific to the planning area are not available at this time.

4.2.1.1. General Assumptions

- Sufficient funding and personnel would be available to implement RMP decisions.
- Implementation of decisions would be in compliance with valid existing rights, federal regulations, BLM's policies, and other requirements.
- Facility and recreational developments would be maintained as appropriate.
- Discussion of impacts is based on best available knowledge. Knowledge of the planning area and professional judgment, based on observation and analysis of conditions and responses in similar areas, are used to predict environmental impacts where data is limited.
- Acreage figures and other numbers used in analysis are approximate projections for comparison and analytic purposes only. Acreage figures do not reflect exact measurements or precise calculations.
- State and Native entitlements would be met during the life of the plan. BLM-managed lands would be reduced by 250,000 to 300,000 acres over the life of the plan, mostly in the Fortymile Subunit. Most of the State-selected lands in the Upper Black River Subunit would likely remain under BLM management.
- The life of the RMP would be 20 years or more.
- State- and Native-selected lands are segregated from mineral entry and would become available for mineral entry or leasing only when they either are conveyed or are returned upon rejection of land selection. If subject lands are additionally affected by ANCSA 17(d)(1) withdrawals, then the withdrawal would need to be modified or revoked as well.
- The BLM would maintain a government-to-government relationship with federally recognized tribes.

4.2.1.2. Resource Assumptions

4.2.1.2.1. Air

Air quality is pristine or nearly so, except for seasonal influences such as smoke, wind-blown dust, and arctic haze. Smoke from wildland fires would occasionally exceed EPA limits for airborne particulates. Despite these seasonal influences, the planning area is still considered an attainment area as it meets the standards of the Clean Air Act. It is assumed that there would be no non-attainment areas on BLM-managed lands during the life of the plan.

4.2.1.2.2. Climate Change

It is assumed climate change will occur during the life of the plan and through adaptive management the BLM would mitigate impacts to resources to the extent practicable.

Following Council on Environmental Quality (CEQ) 2014 guidance, throughout parts of Section 4, climate change and GHG emissions will be addressed and discussed as distinct issues: Discussion of the first issue, projected climate change due to global conditions, focuses on potential impacts to BLM resources due to a changing climate regime. Discussion of the second issue, GHG emissions, is focused on assessing GHG emissions associated with current and future BLM-authorized activities in the planning area. Guidance from the CEQ 2014 recommends agencies focus their GHG emissions analysis on the projects and actions with the greatest impacts by providing a reference point of 25,000 metric tons of CO₂e-equivalent emissions on an annual basis below which a quantitative analysis of GHG emissions is not recommended unless it is easily accomplished (CEQ, 2014).

While there are difficulties in attributing specific climate change impacts to any given project or activity and quantifying those impacts, it is important to note projected GHG emissions can serve as a proxy for a proposed action's climate change impacts.

For the purpose of this plan the net contribution to atmospheric carbon from effects of climate change is expected to be minimal. Increased wildland fire frequency and to a lesser extent, thawing permafrost, would likely contribute carbon but increased temperatures, length of growing season, and expanded growth of forests in former permafrost rich areas would all act as carbon sinks. Release of carbon from thawing of permafrost soils remains a concern. However, Schurr et al. (2009) found areas that thawed over the past 15 years had more annual losses of old carbon than minimally thawed areas, but had overall net ecosystem carbon uptake as increased plant growth offset these losses.

4.2.1.2.3. Cultural and Paleontological Resources

The BLM would continue to mitigate impacts to significant cultural resources from authorized uses through avoidance and, if necessary, data recovery. New cultural resources would continue to be found and evaluated for eligibility to the National Register of Historic Places. Eligible cultural resources would continue to be treated similarly and equally in terms of type, composition, and importance, but many would continue to deteriorate through natural agents, unauthorized public use, and vandalism. The BLM would consult with Native and village corporations and tribes on traditional cultural properties and values that are of concern to them. The demand for uses of lands on which cultural resources occur could increase slightly.

The BLM would mitigate impacts to significant paleontological resources from authorized uses through avoidance and specimen recovery. Geologic formations with exposures containing vertebrate and non-vertebrate fossils would continue to be impacted from natural agents, unauthorized public use, and vandalism. The demand for use of both vertebrate and non-vertebrate fossils could increase slightly during the life of the plan.

4.2.1.2.4. Fish and Wildlife

Fish

Increases in human population and consumption would increase the demand on sport, subsistence, and commercial fisheries. International and national trends to protect and manage wild fish stocks would likely continue. The BLM would continue to manage and protect important spawning, rearing, overwintering, and migratory fish habitat. The BLM would cooperate with the ADF&G to preserve the genetic integrity of Alaska's wild stock of resident and anadromous fish populations. Improvements or protection of riparian habitats would indirectly improve or protect aquatic habitats and fisheries. Degradation of riparian habitats would indirectly degrade aquatic habitats and fisheries. Management opportunities for maintenance or improvement of fish habitat conditions would occur in Conservation and Restoration Watersheds. There is a direct correlation between the amount of quality habitat and fish populations.

Potential impacts to the quality of aquatic habitat would increase. Lifting of mineral withdrawals in some areas would result in increased mining activities under some alternatives. Placer mining within an active stream channel would adversely affect fish and fish habitat.

Some fish species, especially anadromous species, move seasonally or migrate between BLM-managed lands and non-BLM lands, and impacts on fisheries populations as a result of this RMP may occur on non-BLM lands. All of the anadromous fish streams and the extent of anadromy have not yet been identified.

Wildlife

The BLM would minimize impacts to wildlife species. Wildlife habitats would remain in natural condition over most of the area. Effects of management actions on wildlife are often not predictable or quantifiable.

The size, diversity, and viability of species populations is dependent upon the quantity and quality of habitat. Habitat can be lost or impacted directly (e.g., vegetation removal) or indirectly (e.g., disturbance caused by human activity).

Habitat conditions will vary due to natural processes, even in the absence of human-caused changes. Climate change will result in increased stress on some species of wildlife. Habitat quality or availability may decrease for some species; other species may see an increase in availability of habitat due to changes in the vegetation associated with climate change. Management actions may benefit one species while having an adverse, or beneficial, impact on another.

Activities on non-BLM lands may impact wildlife populations occurring on BLM lands, particularly migratory species. Conversion of BLM-managed lands to private lands (conveyance) would increase hunting pressure on the remaining BLM-managed lands. Development of

non-BLM lands would increase, and access to lands surrounding BLM-managed lands would improve.

4.2.1.2.5. Non-Native Invasive species

The number and type of non-native invasive plants would increase during the life of the plan, but would be concentrated around areas of human activity (e.g., rivers, trails, roads and mines). Increases in introduction and spread of non-native invasive plants may be accelerated by longer growing seasons (climate change). Waterways may be vectors for spread of non-native plants. The demand for control of non-native invasive plants would increase as public knowledge of the economic and ecological detriments of these plants increases.

4.2.1.2.6. Soil Resources

Climate change would affect soils through changes in permafrost extent, soil temperature, and soil moisture, with subsequent changes in evapotranspiration, runoff, wildland fire frequency, and vegetation.

4.2.1.2.7. Special Status Species

The BLM Alaska Sensitive Species List will change periodically. Although no threatened or endangered species currently occur in the planning area, additional species could be listed as threatened or endangered in the future. Inventory may identify additional Special Status Species on BLM-managed lands, and will likely result in the expansion of known ranges and numbers of populations. Knowledge of the distribution and abundance of these species will grow, likely resulting in removal of some species from the list. Identification of new rare species from understudied species groups will likely occur.

National demand for the protection of species listed under the Endangered Species Act, as well as for species not yet listed but of concern, would likely increase. There are numerous BLM Alaska sensitive species known or suspected to occur in the planning area. Demand for protection of these species would increase as inventory indicates specific habitat niches or requirements, and as increased visitor use or development places demands on associated habitats.

4.2.1.2.8. Visual Resources

Scenic resources would remain in demand from local residents who want to maintain scenic quality, local businesses that depend on tourism, and an increasing level of recreational users within the planning area. Increasing tourism would increase the value of scenic views, undeveloped landscapes, and open spaces.

4.2.1.2.9. Water Resources

Throughout parts of Chapter 4 the discussion of water resources impacts is intended to be inclusive of all surface and subsurface waters in the planning area as well as wetlands and floodplains unless specified otherwise. During the life of the plan water resource demands are expected to increase as a result of increasing recreation use, increases in human population, and increases in mineral exploration and development. Through adaptive management BLM would mitigate adverse impacts water resources to the extent practicable. Water quality requirements and

standards would be achieved by the use of SOPs (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations).

4.2.1.3. Resource Use Assumptions

4.2.1.3.1. Forest and Woodland Products

There may be requests for biomass from BLM related to biomass heating of combined heat and power (CHP) projects in some of the villages within the planning area. While most resources close to the villages are not controlled by BLM there may be BLM lands involved in the long run for some communities. These situations will be dealt with on a case-by-case basis. A few (three to five) small biomass projects could occur during the life of the plan, most likely in the Fortymile Subunit.

Large commercial timber sales would be unlikely. Forest product sales would be small (four permits in 10 years). Permits will be required for firewood and other vegetative uses in accordance with the Alaska BLM forestry program guidance. Most sites will be less than one quarter acre in size.

4.2.1.3.2. Lands and Realty Actions

Land conveyances to the State of Alaska and Native corporations would be completed. An estimated 260,000 to 325,000 acres in the Fortymile Subunit would be conveyed to Doyon, Limited (Doyon 2015). There would be a limited demand for land ownership adjustments to improve the manageability of federal and non-federal lands. Lands identified for disposal along the Alaska Highway that are not conveyed, would be disposed of. Lands identified for acquisition in the Steese National Conservation Area would be acquired. Most federal mining claims would continue to be maintained as valid claims or would be transferred to state claims and would not be available for disposal.

There would be continued demand for land use authorizations such as rights-of-way, leases, and permits under all alternatives. Demand for use authorizations would fluctuate with economic growth and development, but would generally be low. Based on applications over the past five years, it is anticipated that no more than 30 applications would be received annually.

Withdrawal reviews would be completed within ten years of plan approval. All withdrawal recommendations would be completed. No new mining claims would be located on lands recommended for withdrawal. ANCSA 17(d)(1) withdrawals would be modified to remove the withdrawal from approximately 13,000 acres of isolated federal mining claims outside of the Steese National Conservation Area and WSR corridors.

4.2.1.3.3. Leasable Minerals

Coal

No coal development would occur on BLM-managed lands, because a decision on leasing for coal is deferred. The RMP would need to be amended before coal leasing could be authorized.

Coal resource inventory and exploration (43 CFR 3480) could occur in the Eagle Coal Field, on BLM-managed lands in the Fortymile Subunit. Coal exploration activities would be minimal due to the lack of high potential coal lands, lack of transportation infrastructure, and the fact that a large part of the Eagle Coal Field is located within the Yukon-Charley Rivers National Preserve. Coal exploration includes drilling, excavating, and geological, geophysical or geochemical surveying operations. Exploration of coal requires an exploration license (43 CFR 3410). Each license would include requirements to protect the environment and associated natural resources, and ensure reclamation of the lands disturbed by exploration.

Coalbed Natural Gas, Geothermal, Non-Energy Leasable Minerals, and Oil Shale

No exploration or development of coalbed natural gas is anticipated. The only lands with potential for this resource have been explored and were not found to be economical.

No exploration or development of geothermal resources is anticipated. The only hot springs on BLM-managed land is Big Windy Hot Springs, within the Steese National Conservation Area. It is not located near a population center or infrastructure, and is within a Research Natural Area.

No exploration or development of non-energy leasable minerals or oil shale is anticipated because of low occurrence of these types of minerals on BLM-managed land.

Oil and Gas

In areas recommended open to oil and gas leasing, leasing would not occur without further NEPA analysis. Interest from industry is expected to be limited for all subunits due to the lack of high potential areas on BLM-managed lands. Seismic exploration could occur in the Steese or Black River subunits on high potential lands, but is unlikely during the life of the plan. The following assumptions apply to all action alternatives.

- Roadless exploration, in the form of seismic surveys, would occur after the tundra is frozen. Only approved low-impact tundra travel vehicles would be used. Field sampling and reconnaissance would occur in the summer using helicopter support.
- Approximately 130 to 212 2D or 3D seismic line miles would be shot every five years in the Yukon Flats Basin. Less than 20 miles of this would be on BLM-managed land.
- Woody vegetation would be cleared on 14-foot wide survey lines using mechanized mulchers.
- Vibroseis would be the energy source used for seismic exploration. The vibrator pads would be mounted on trucks with low pressure tires.
- Seismic crews would be supported by ground vehicles and aircraft, and housed in a remote camp.
- If explosives are used, narrow profile, tracked drills would be used for drilling 20 to 60 foot deep, 3.5 inch diameter holes where explosive charges would be placed and detonated. The augered material would be placed back in the hole prior to detonation.

4.2.1.3.4. Locatable Minerals

The following information is excerpted from the Eastern Interior RMP Reasonable Foreseeable Development Scenario for Locatable Minerals and Leasable Hardrock Mineral Resources in the White Mountains Subunit (BLM 2015). This Reasonable Foreseeable Development (RFD) Report is a mechanism to analyze the effects that discretionary planning decisions have on

mineral development based upon five alternatives for each of the four planning subunits. The RFD is available online at www.blm.gov/ak/eirmp.

RMP alternatives recommend that mineral withdrawals be lifted ('opened') to varying extents. Generally, to analyze the assumed increase of mining activities on opened lands, we compare the level of mining activities of neighboring lands of similar character that are currently open to mining activities. Mining activities are separated into four categories for analysis: Suction Dredging, Mechanical Placer Mines, Hardrock Exploration Projects, and Large-Scale Lode Mines. These categories were devised by looking at the number, size, and type of operations in the region as a whole, with data collected through the review of multiple mine plans, reclamation bond inventories, and lists of permits issued by various agencies. From this review, hypothetical mining models are created that reflect locally common mining methods and equipment.

The primary attributes that dictate the size, cost, efficiency, and impacts of the four modeled mining activities are listed as assumptions in their respective sections. Many of the assumptions are derived from a Reasonable Foreseeable Development – Mine Cost and Impact Model report (2009) authored by Scott Stebbins, Mining Engineer with Aventurine Engineering, Inc. Mr. Stebbins has extensive experience developing mining cost estimations and is considered an expert in the field.

The areas recommended to be "Opened" to mineral entry by lifting withdrawals, in Alternative E, is similar to the areas proposed in Alternative B with respect to the amount of acres with High or Medium locatable mineral potential. The amount of foreseeable mining-related developments in Alternative E and Alternative B are estimated to be equal.

Mining Claims, Mining Plans of Operation, and Notices

According to BLM records, at one time there were as many as 16,000 active federal mining claims in the planning area, starting when the BLM took over the administration of all federal mining claims in 1979. Federal mining claims in areas that are now state lands have been relocated or converted to state claims, and hundreds of claims once located in the White Mountains National Recreation Area and the Steese National Conservation Area were abandoned and/or closed. There are currently no active federal claims in the White Mountain National Recreation Area and only 103 remaining placer claims in the National Conservation Area. There are currently about 15,200 state mining claims as well as a few score of mining leases and prospecting sites on State managed lands in the planning area.

Table 4.1. Mining Claims and Mining Plans of Operations or Notices in the Planning Area

Planning Subunit	Active Federal Mining Claims (July 2014)	Closed Federal Mining Claims (July 2014)	Active State Mining Claims (Dec 2013)	Current Federal Plans or Notices (July 2014) ^a	Closed Federal Plans or Notices (July 2014) ^b
Fortymile	352	8,341	12,449	35	106
Steese	218	5,171	1,703	10	102
Upper Black River	0	42	0	0	0
White Mountains ^c	172	2,695	959	5	20
Total	742	16,249	15,111	50	229

^aAuthorized Plans of Operation and Notices

^bClosed or Pending Plans of Operation and Notices

^c located outside of the White Mountains National Recreation Area

Suction Dredge Operations

Suction dredging generally provides a relatively low-capital mining method for exploiting active streams systems with shallow bedrock. Suction dredging, performed according to the stipulations of state and federal permits, usually causes minor levels of disturbance relative to mechanical placer mining methods. Where salmon spawning takes place, the dredging season is limited to early summer after the salmon fry have migrated out of local streams and before spawning salmon have returned from the ocean.

The number of suction dredging operations expected under each alternative is outlined in the Table 4.2. Assumptions for suction dredge operations include:

- A crew of two would use a six-inch dredge operated by two, 11 horsepower motors.
- Operations would continue for approximately 90 days, moving 20 cubic yards of material. Processed materials would flow directly back into the active channel.
- A single floating vessel would contain the pump used to recover gravel, the air source for the diver, and the sluice used to recover gold.
- The camp would be 0.2 acres in size and up to 400 gallons of fuel may be stored at the camp.
- Operators would transport fuel from Fairbanks via ground transportation.
- Operators would access the site by four-wheel drive trails in most cases.
- There will be no casual-use level suction dredging. All suction dredgers will need to file an APMA/Plan of Operations.

Table 4.2. Anticipated Number of Suction Dredging Operations on Mining Claims

Subunit	Alternative (# suction dredging operations)				
	A	B	C	D	E
Fortymile	6	10	14	18	10
Upper Black River	0	0	0	0	0
Steese	1	1	9	12	1
White Mountains	0	0	0	0 ^a	0

^aSuction dredge operations on mineral leases in the White Mountains are discussed in Appendix M.3.1

Mineral Exploration Activities

Once mining claims are located, mineral exploration companies may establish a local camp and perform helicopter supported field sampling and mapping programs. If the exploration is successful, a drilling or trenching program would be conducted. Drilling would occur on temporary pads which are dismantled and removed after drilling is complete. Surface disturbance for drilling or trenching would be approximately two acres per year, which is completely reclaimed each year. Exploration projects would last for five years, resulting in a total of 10 acres surface disturbance. Disturbance from the camp would be approximately 0.4 acres.

It is assumed that over the life of the plan, one drilling program in the Steese Subunit may proceed to a mine pre-feasibility study where multiple drills are brought in. In this event, 10 acres would be disturbed per year over a five-year project life. The camp associated with a pre-feasibility would disturb up to 2.5 acres and helicopter use would increase to six hours per day.

Table 4.3. Anticipated Number of Mineral Exploration Operations

Subunit	Alternative (# mineral exploration operations)				
	A	B	C	D	E
Fortymile	1 ^a	3 ^a	4 ^a	5 ^a	3
Steese	1	1	2 ^b	2	1 ^b
Upper Black River	0	0	0	0	0
White Mountains (Livengood)	1	1	1	1	1

^aIncreased from Draft EIS^bDecreased from DEIS

Small-Scale Placer Mining

On average, site surface impacts would be approximately 4.4 acres per placer operation. Disturbance from the camp would be approximately 0.4 acres of this. Placer mines may operate as a Notice Level operations under 43 CFR 3809.13, but otherwise would require a Plan of Operations under 43 CFR 3809.10. If the claims occur in a WSR corridor, the Steese National Conservation Area, or an ACEC, they would require a Plan of Operations even for exploration. On average, an estimated one acre would be mined and one acre reclaimed each year. Approximately 4.4 acres would be continually disturbed for each operation. The life of each mine would be 10 to 20 years and a total of 20 to 30 acres would be disturbed during the life of the mine.

Table 4.4. Anticipated Number of Small-Scale Placer Mining Operations

Subunit	Alternative (# small-scale placer mines)				
	A	B	C	D	E
Fortymile	27	31	33	40 ^a	31
Upper Black River	0	0	0	0	0
Steese	7	8	15	24	8
White Mountains (Livengood)	3	3	3	3	3

^aIncreased from DEIS

Large-Scale Placer Mining

On average, site surface impacts would be approximately five to 20 acres per placer mine and be subject to regulations found in 43 CFR 3809.10. Four acres would be mined and four acres reclaimed each year, with 16 acres continually disturbed for each project. A total of 60 to 80 acres would be disturbed and reclaimed during the life of the mine (10 to 20 years). Reclamation would occur before the bond is released.

Table 4.5. Anticipated Number of Large-Scale Placer Mining Operations

Subunit	Alternative (# large-scale placer mines)				
	A	B	C	D	E
Fortymile	2	3	3	3	3
Steese	2	2	4	4	2
Upper Black River	0	0	0	0	0
White Mountains (Livengood)	1	1	1	1	1

Large-Scale Lode Mines

Two lode mines may be developed primarily on state or private land. The Money Knob prospect includes 400–500 acres of federal mining claims. These are described in section 4.2.4 Cumulative Effects.

4.2.1.3.5. Salable Minerals

Demand for gravel, rip-rap and other salable minerals would increase slightly as road maintenance and construction continue on state highways and BLM roads. Currently there are 11 active or pending material sites, totaling 160 acres of authorized disturbance. Existing material sites are located near existing roads, as the largest need for materials is road maintenance. Most of the BLM-provided materials are authorized under free-use permits to the ADOT or federal government, or as mandated under the TAPS authorization. These assumptions apply to all alternatives.

- No more than 200 acres of BLM-managed land would be required to meet material demands over the next 20 years; 100 acres each in the Fortymile and White Mountains subunits.
- No new significant federal material sites are anticipated away from existing roads.
- Demand for material would generally be met from production on state lands.
- The future construction of a gas pipeline would increase demand for materials. This demand would mainly be met from state lands. The BLM could be directed to make materials available for pipeline construction; however, this is unlikely in the planning area due to the lack of BLM-managed lands near the potential pipeline corridor.
- To date, sales from split-estate lands in Fairbanks, and contract sales out of the Eagle community gravel pit have accounted for the majority of the sales in the Fortymile Subunit. Use of split-estate lands in Fairbanks, is expected to diminish.

4.2.1.3.6. Recreation

The demand for recreational use and recreational visits would increase by ten to fifteen percent over the life of the plan, due to general population increases and increases in recreation-related technology, leading to increased resource damage and conflicts among recreation users.

Anticipated increases would occur for both non-motorized and motorized activities. If recreation use levels or user/resource conflicts increase to the point that significant administration actions are needed, a recreation management plan would be developed to address the issues.

Special Recreation Management Areas would contain Recreation Management Zones (RMZs), each of which would be managed for specific activities, experiences, and benefits (Appendix H, *Recreation Management Zones*), in one of six prescribed recreation settings, described in Table 2.5, “Recreation Setting Character Matrix for the Eastern Interior Planning Area”.

4.2.1.3.7. Renewable Energy

Considering such factors as the amount and intensity of sunlight, wind velocity, proximity to roads and electric transmission facilities, and population size, no applications would be received to permit or lease commercial construction of solar or wind facilities on BLM-managed lands under any alternative. The BLM may construct small solar or wind facilities to support BLM administrative sites and facilities. Biomass projects are addressed under section 4.2.1.3.1.

4.2.1.3.8. Travel Management

All Subunits

Demand for legal and physical access from all users would increase. Public easements reserved by Section 17(b) of ANCSA would become more important as Native corporation entitlements are met. Demand for roads and transportation rights-of-way would increase slightly. Road development is contingent upon the economic viability of resource development, primarily minerals, and the needs of the State to plan and carry out transportation access.

The use of OHVs (including snowmobiles) for recreational and subsistence purposes would increase. Changes in OHV design and technology would continue, enabling OHV users to range into areas that were once thought to be inaccessible. Most impacts described in this analysis result from OHVs used during snow-free months. Where impacts are specific to snowmobiles, they are described as such.

Travel Management plans for the Fortymile and Steese subunits would begin within five years of the signing of the RODs. In these areas, summer OHV use would be limited to existing routes (Alternatives B and C) and size (all Alternatives) until the Travel Management Plan is developed. The BLM will conduct additional impact analysis during travel management planning.

Fortymile Subunit

Alternatives A and D: The Fortymile Subunit would see significant growth in travel-related land use and activity participation. Since OHV use accounts for the majority of travel-related activities, the demand for this activity would be of greatest concern. Given its current rate of user increase (about ten percent per year) use in the Fortymile is expected to double within the next 10 years. Existing routes would be repaired to sustainable standards and some new sustainable trails may be constructed. This would result in an increase in visibly affected ground area of about twenty-five percent over the next 10 years.

An increase in non-motorized modes of travel are also forecasted. An estimated 10 miles of sustainable, non-motorized trails would be constructed over the life of the RMP.

Alternatives B and C (Existing Routes): Based on an estimate that about twenty-five percent of use occurs off of the existing routes identified for these alternatives, use would initially decline by twenty to thirty percent and then grow at a rate of about five percent per year. Use would be double the current level in 20 years and then begin to stabilize. This would result in an increase in visibly affected ground area of about five percent over the next 10 years. Federally qualified subsistence users engaged in subsistence activities can access lands with seasonal limitations for casual users by obtaining a free-use permit.

Alternative E: The Fortymile Subunit would see significant growth in travel-related land use and activity participation. Since OHV use accounts for the majority of travel-related activities, the demand for this activity would be of greatest concern. Given its current rate of user increase (about ten percent per year) use in the Fortymile is expected to double within the next 10 years. Existing routes would be repaired to sustainable standards and some new sustainable trails may be constructed. This would result in an increase in visibly affected ground area of about twenty-five percent over the next 10 years. The prohibition on airboats and hovercraft in the non-navigable, wild, segments of the Fortymile WSR would be removed. While it is not measured, some level of

this type of access is already occurring. This type of use could increase by about 20 to 25 percent over the life of the RMP on the Mosquito Fork above Ingle Creek and the section of the North Fork below the Kink. Use on the sections of the North Fork above the Kink will be limited due to the natural river obstacles and is not likely to see much change.

Steese Subunit

Alternatives A and D: The Steese National Conservation Area would see continued growth in travel-related land use and activity participation. Since OHV use accounts for a sizeable portion of travel-related activities in the National Conservation Area, demand for this activity would continue to grow in the future. Existing routes would be repaired to sustainable standards and some new sustainable trails would be constructed. This would result in an increase in visibly affected ground area of about ten percent over the next 10 years.

The growth of non-motorized modes of travel are also forecasted. An estimated 20 miles of sustainable, non-motorized trails would be constructed over the life of the RMP.

Alternatives B and C (Existing Routes): Based on an estimate that about fifteen percent of use occurs off of the existing routes identified for these alternatives, use would initially decline by ten to twenty percent and then grow at a rate of about five percent per year. Use would be double the current level in 30 years and then begin to stabilize, resulting in an increase in visibly affected ground area of about five percent over the next 10 years. Federally qualified subsistence users engaged in subsistence activities can access lands with seasonal limitations for casual users by obtaining a free-use permit.

Alternative E: The Steese National Conservation Area would see continued growth in travel-related land use and activity participation. Since OHV use accounts for a sizeable portion of travel-related activities in the National Conservation Area, demand for this activity would continue to grow in the future. Existing routes would be repaired to sustainable standards and some new sustainable trails would be constructed. This would result in an increase in visibly affected ground area of about ten percent over the next 10 years. The prohibition on airboats and hovercraft in the non-navigable segments of Birch Creek WSR would be removed. There is no current recorded use of hovercraft and airboats however, it is estimated that this type of use would increase over the life of the RMP. No more than 20 percent of users would likely engage in that activity. Low water levels in upper Birch Creek may limit the increase in these types of use.

Upper Black River Subunit

All Alternatives: With advances in recreational vehicle technology, this subunit could experience an increased level of land use and activity participation related to OHVs and access for subsistence use. However, this increase would be limited due to the features of topography, soils, vegetation, permafrost, lack of any defined trails, and the remoteness of the area.

White Mountains Subunit

Alternatives A and D: Trends and field observations show increasing use and demand for travel-related activities and access in the White Mountains National Recreation Area. Popularity of the White Mountains roads and trails, local population numbers, and OHV (including snowmobile) ownership are all currently on the rise. Use would continue to increase at current rates (five percent per year). Existing trails would be repaired to sustainable standards. An

estimated 100 miles (five miles/year) of sustainable, multiple-use trails would be constructed over the life of the RMP. The ground area visibly affected by OHVs would increase by about twenty percent over the next 10 years. Under Alternative D, 112 miles of trail would be open to UTV use.

The growth of non-motorized modes of travel are also forecasted. An estimated 80 miles (four miles/year) of sustainable non-motorized trails would be constructed.

Alternatives B and C (Designated Trails): Based on an estimate that about twenty percent of use occurs off the trails identified as “designated” for these alternatives, use would initially decline by at least twenty to thirty percent and then grow at a rate of about five percent per year. Use would be double the current level in 30 years and then begin to stabilize. The ground area visibly affected by off-highway vehicles would increase by about five percent over the next 10 years. Sustainable trails would be constructed at a rate of two miles per year (40 miles over the life of the RMP), and violations would increase. Under Alternative C, 27 miles of trail would be open to UTV use.

Alternative E Increase in use levels would be similar to Alternatives A and D with the differences listed below. Trends and field observations show increasing use and demand for travel-related activities and access in the White Mountains NRA. Popularity of the White Mountains roads and trails, local population numbers, and OHV (including snowmobile) ownership are all currently on the rise. Use would continue to increase at current rates (five percent per year). Existing trails would be repaired to sustainable standards. An estimated 100 miles (five miles/year) of sustainable, multiple-use trails would be constructed over the life of the RMP. The ground area visibly affected by OHVs would increase by about twenty percent over the next 10 years.

- Larger UTVs would be allowed on 27 miles of trail similar to Alternative C. This is less than the 112 miles of trail in Alternative D, so the use of these types of vehicles is projected to be somewhat lower than Alternative D.
- It is reasonably expected that by lifting the prohibition on hovercraft and airboats on Beaver Creek WSR that little change or conflict would occur. Launching boats with motors exceeding 15hp would still be prohibited in Nome Creek valley. These types of watercraft would have to come upstream on Beaver Creek from the Yukon River all the way across the Yukon Flats NWR which is unlikely.
- The BLM will compete a travel management plan within five years of the ROD. This process will include additional site-specific impact analysis.

4.2.1.4. Special Designation Assumptions

Designated Areas of Critical Environmental Concern and Research Natural Areas would be managed to maintain the values for which they were designated. Eligible rivers would be managed to protect water quality, free-flowing nature, and Outstandingly Remarkable Values from the time the Draft RMP is published until a suitability decision is reached with the publication of the ROD. Rivers found to be suitable for designation as WSR in the ROD would be managed to protect water quality, free-flowing nature, and Outstandingly Remarkable Values until such time as Congress acts on proposed designation legislation.

4.2.1.5. Social and Economic Assumptions

Public Health and Safety

Public health and safety issues would receive priority consideration in the management of BLM-managed lands. Hazmat and AML sites of concern would continue to be identified and cleaned up. The Tanacross Administrative and Airfield hazmat sites would be remediated.

The draft alternatives would not result in any public health impacts requiring impact analysis in this EIS.

Social and Economic

The population within the planning area will likely increase by ten to fifteen percent during the life of the plan, based on population trends since 1960. No change in borough status or boundaries is assumed. A large project (e.g., construction of a natural gas pipeline) would result in increased population growth in the region. Population trends, and increased recreational and subsistence demand trends, will influence social aspects of the planning area.

The economic impact analysis is based on changes resulting from proposed decisions in this RMP. Other factors that would affect the local economy, such as population growth, tourism trends, taxes, or resource extraction on other lands, are assumed to be the same for all alternatives.

The social groups defined in this RMP are to facilitate the discussion of social impacts. These groupings greatly simplify members' beliefs and values. For example, some miners engage in subsistence activities and are concerned about resource protection. Recreation users may engage in both motorized and non-motorized activities. The social impact analysis focuses on groups that have been identified as most likely to be affected by this plan.

The proximity of BLM-managed lands to the small communities of Central, Chicken, Circle, Eagle, and Eagle Village suggests that effects may be more significant to these locations than communities located away from the public lands, or larger communities with more diverse social patterns and resource alternatives. However, impacts to affected groups at the local, state, and national levels have been considered.

Subsistence

The BLM would continue to have a major role in the management of subsistence resources on public lands over the life of the plan. The demand for subsistence resources would increase. Competition for resources would increase, especially those that receive high use from all resource users, because more lands would be private and recreational use of BLM-managed lands would increase.

As land conveyance to the State of Alaska and Native Corporations is finalized, over selections would be relinquished to BLM. Harvest of wildlife resources would then be regulated by federal subsistence and state regulations. The acres of federal public lands managed for federal subsistence purposes in the Upper Black River and Fortymile subunits would increase.

Tribal members use Native, village corporation, and BLM-managed lands for traditional subsistence activities, and would continue to do so. Subsistence use by other federally qualified

residents in the planning area would continue on federal public lands. Federal public lands for the purpose of subsistence use are defined in 50 CFR Part 100, § 100.4(1) and (2).

Federally qualified subsistence users are residents of the State of Alaska, as defined in 50 CFR Part 100 § 100.4, and whose primary, permanent home is within an area determined to be rural by the Federal Subsistence Board through the process in 50 CFR Part 100 § 100.15. In Alternatives B, C, and D, federally qualified subsistence users engaged in subsistence activities in areas closed to OHV (research natural areas) would have access by snowmobile with a free and readily available permit. In Alternative B in the Steese Subunit, where casual use of OHV is limited federally qualified subsistence users engaged in subsistence activities would be allowed access with the same free and readily available permit. In other areas and alternatives OHV restrictions would apply to all users.

Permits for subsistence use would be to an individual, issued annually, and allow for applicable methods of access. Notice of availability of the free permits would be posted at BLM offices, online, and on kiosks on BLM-managed lands. Permits would be obtained by calling, mailing, or in person. After processing the permit would be sent by mail, email, or picked up in person.

Subsistence use in the White Mountains and Steese subunits has been low and would continue to be low (Chapter 3, Affected Environment 3.5.3. Subsistence). OHV use for subsistence purposes in these subunits would be low. In areas where subsistence use of OHVs is allowed, but casual use is not, subsistence use may increase. Use for subsistence purposes is high in the Fortymile and Upper Black River subunits (Chapter 3, Affected Environment 3.5.3. Subsistence). OHV use for subsistence activities in the Fortymile subunit would be high. The entire Black River drainage is and would continue to be important to local residents for traditional harvest of resources for subsistence purposes. Access to the Upper Black River by OHV for subsistence purposes during snow free seasons would be nonexistent to very low since the area is extremely difficult to traverse overland and few trails exist.

4.2.2. Types of Effects

Direct, indirect, and cumulative impacts are considered in effects analysis, consistent with direction provided in 40 CFR 1502.16. Direct impacts are caused by an action or by implementation of an alternative and occur at the same time and place as that action or implementation. Indirect impacts also result from an action or implementation of an alternative, but usually occur later in time or removed in distance from the action or implementation.

4.2.3. Incomplete or Unavailable Information

The best available information pertinent to the decisions to be made was used in development of this RMP. Data has been acquired from both BLM sources and outside sources. Some information was unavailable for use in developing this plan, usually because inventories have either not been conducted or are not complete (such as comprehensive trail inventories in the Steese, Fortymile, and Upper Black River subunits, subsistence use data for some communities; and, information on some populations of fish and wildlife). This is why some impacts are projected in qualitative terms or are described as unknown. Available data is sufficient to make a reasoned choice among alternatives. Subsequent project-level analysis will provide the opportunity to examine site-specific data necessary to determine the appropriate application of the RMP decisions.

Specific data on greenhouse gas emissions from wildfire in the planning area was unavailable due to a lack of detailed vegetation inventory information and associated historic burn severity inventory. While general statewide emissions estimates from the past for Alaska are available (ADEC 2015), more refined, higher resolution estimates for wildfire emissions specific to the planning area are not available at this time.

Specific data on greenhouse gas emissions from wildfire in the planning area was unavailable due to a lack of detailed vegetation inventory information and associated historic burn severity inventory. While general statewide emission estimates from the past for Alaska are available (ADEC 2015), more refined, higher resolution estimates for wildfire emissions specific to the planning area are not available at this time.

4.2.4. Cumulative Effects

Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR Section 1508.7). Guidelines for cumulative effects analysis have been outlined and clarified in the Council on Environmental Quality’s (CEQ’s) Considering Cumulative Effects Under the National Environmental Policy Act (CEQ 1997b).

The cumulative effects analysis for this EIS incorporates the principles outlined by CEQ (CEQ 1997b) and BLM’s NEPA Handbook (H-1790-1). In this analysis the geographic scope and time frames for past, present, and foreseeable future actions are described for federal and non-federal land uses and activities in the region of the planning area. Cumulative effects are analyzed for only those resources or issues that had direct or indirect impacts.

Geographic Scope: The Eastern Interior Planning Area (Map 1) is the general geographic scope for the cumulative effects analysis. Within this area, the BLM manages 6.5 million acres (twenty-one percent) of the land. In addition to this area, military lands occur immediately adjacent to the planning area, adding another 1.6 million acres. Geographic scope varies, and is further described in the respective subsections below.

Time frame: A general time frame for this analysis begins in the 1880s, when mining and community development became widespread in Interior Alaska, to 30 years in the future (2040). Forecasting beyond 30 years would be highly speculative. Specific time frames for resources and issues will be discussed in the respective subsections below.

4.2.4.1. Activities Considered in the Cumulative Case

The following sections describe activities that were considered in the cumulative effects analysis.

4.2.4.2. Past and Present Land Use and Activities

Land Use

BLM-managed land: Past and current land use on BLM-managed lands in the planning area (Map 1) are considered for this analysis. This information is described in detail in Chapter 3 of this EIS.

National Wildlife Refuges: The Yukon Flats and Tetlin National Wildlife Refuges (NWR) were established in 1980 by ANILCA. ANILCA also enlarged the Arctic NWR. The 28 million acres covered by these three refuges are managed to conserve fish and wildlife resources, fulfill international treaty obligations of the United States with respect to fish and wildlife resources and habitats, provide continued subsistence use, and ensure water quality and quantity within the region. Activities taking place on the refuges include hunting, fishing, recreational use, and subsistence harvest, as well as research and management activities. Oil and gas exploration has occurred on the Yukon Flats NWR (USFWS 2008a). Past seismic surveys have totaled about 514 miles. Approximately 7.16 million acres of the Arctic NWR is designated Wilderness by ANILCA.

National Park Service Lands: The Yukon-Charley Rivers National Preserve was established in 1980 by ANILCA. The purpose of the 2.5 million-acre preserve is to protect and conserve natural and cultural resources to ensure that they can be used and enjoyed for future generations. There are no roads or settlements in the preserve, and the area is accessed primarily by boat, aircraft, or snow machine. The preserve includes approximately 5,100 acres of mining claims and a seven mile right-of-way for a state road to the Coal Creek mining area. Intermittent mining activity occurred from the 1880s through the 1970s. Since the establishment of the preserve, the lands have been managed primarily for conservation and wilderness values.

State Lands and State Managed Resources: The planning area includes nearly 11.4 million acres of state lands and 1.6 million acres of BLM-managed lands have been selected by the state. Most of the state lands in the planning area are managed under guidelines outlined in the Tanana Basin Area Management Plan (ADNR 1991), the Tanana State Forest Management Plan (ADNR 2001), and the Upper Yukon Area Plan (ADNR 2003), although some tracts have no management plan. Other management areas include the Chena River Recreation Area (ADNR 2003) and numerous recreation areas and public access sites.

The state lands are managed for multiple use with priorities varying according to resource values for particular subunits. Primary land uses include forestry, agriculture, minerals management, recreation, fish and wildlife habitat, heritage resources, recreation and tourism, settlement, public access, transportation, and low-value resource management. Uses prioritized to conserve valuable resources in some areas while allowing resource use in other areas.

ADF&G is responsible for management of fish and wildlife resources and its management activities apply to all lands. The mission of the ADF&G is to protect, maintain, and improve the fish, game, and aquatic plant resources of the state, and manage their use and development in the best interest of the economy and the well-being of the people of the state, consistent with the sustained yield principle. Core services include: provide opportunities to utilize fish and wildlife resources; manage fish and wildlife resources for a harvestable surplus and sustained yield; provide information on fish and wildlife resources; involve the public in management of fish and wildlife resources; protect the state's sovereignty to manage fish and wildlife resources; and protect important fish and wildlife habitat during permit and project review (www.adfg.alaska.gov).

Native Lands: Alaska tribes received land selection rights through ANCSA. Approximately 3 million acres have been transferred to Native corporations, and an additional 900,000 acres are selected. Doyon, Limited, is the major land holder in the planning area. Doyon, Limited's, management objectives include mineral development, oil and gas exploration, real estate, and tourism, as well as traditional uses, subsistence, and conservation. Native village corporations owning land include Stevens Village, Beaver, Birch Creek, Fort Yukon, Chalkyitsik, Dot Lake,

Healy Lake, Eagle Village, Northway, Tetlin, and Tanacross. Doyon, Limited holds ownership interest in approximately 1.2 million acres in the planning area and anticipates receiving title to an additional 325,000 acres in the Fortymile Subunit during the life of the RMP (Doyon 2015).

Past and Present Activities

Oil and Gas Leasing and Exploration: Minimal oil and gas exploration has been conducted in the Steese and Upper Black River Subunits since 1954. Exploration has consisted of activities such as the airborne magnetometer studies, seismic surveys, well drilling, and borings. Three exploratory wells (Louisiana Land and Exploration Wells No. 1, 2, and 3) were drilled in the Kandik Basin in the Upper Black River Subunit in 1980. All three were abandoned as dry holes. Two shallow stratigraphic borings were drilled near Fort Yukon (USFWS 2008a). A coalbed natural gas test well revealed unfavorable results, as coal with only minor amounts of biogenic methane were encountered. Approximately 418 line miles of reconnaissance 2D seismic lines have been conducted in the area (BLM 2009a). Some of these lines are still visible from the air. No development or production of oil and gas has occurred in the planning area.

Placer Mining: The first significant discovery of gold in the planning area was in 1887 on Franklin Creek, a tributary to the Fortymile River, and gold has been mined in the Fortymile region continually since. In 1893 gold was found on Birch Creek which lead to the development of the Circle Mining District and in 1902 Felix Pedro discovered gold which lead to the development of the Fairbanks Mining District. Total historical production from the entire planning area is roughly 13.5 million ounces of gold, including about 2.5 million since 2001 (BLM 2009b). In 2010 the Eastern Interior region produced 766,000 ounces of gold primarily from the Fort Knox and Pogo lode gold mines (Szumigala et al. 2011). In 2007 there were 95 placer operators reporting production from the eastern interior (Szumigala et. al., 2008), in 2013 there were 138 placer operators reporting production (Athey, et. al., 2014). Placer mining is occurring on both federal mining claims and state mining claims in the Fortymile, Steese, and White Mountains subunits. There are no federal mining claims on BLM-managed lands in the Upper Black River Subunit, nor are there any state mining claims.

Suction Dredging: Suction dredging is ongoing on state land. Over the past seven years the number of suction dredging operations permitted by the state has remained relatively constant, despite the price of gold increasing an average of \$100 per year for the same period. In 2011, there were 21 EPA small dredge permits and 44 state suction dredge APMAs in the planning area. Fifty-five of these were located in the Fortymile Subunit. There were no state suction dredging permits in the Upper Black River Subunit and only one in the White Mountains Subunit (BLM 2014a)

Lode Mining: Historically, lode mining occurred in the Cleary Hill Mine area north of Fairbanks.

The Pogo Mine, on state land in the Fortymile Subunit, has been in production since 2006 and operates 24 hours per day. The property consists of 1,281 state mining claims covering approximately 41,880 acres (Sumitomo Metal Mining Pogo LLC 2014). Pogo has produced 2.8 million ounces of gold (Athey et. al., 2014), has 4.6 million ounces in reserves and resources, and is mining at a rate of approximately 340,000 ounces gold a year. The underground mine is 38 miles northeast of Delta Junction, and is accessed by a 49-mile road from the Richardson Highway. Power is supplied via a 50-mile power line paralleling the road. The life of the mine is planned through 2019, but may be extended (Bradner 2014). The total footprint of the mine is about 1,185 acres, including the road and power line ROW. The mine site occupies 425 acres.

The Fort Knox Mine is an open-pit gold mine, located primarily on state and private land 26 miles northeast of Fairbanks. It was permitted in 1994 and operates 24 hours per day. Power is supplied by the regional grid, via a 29-mile power line. It has been the largest producer of gold in Alaska since its commissioning. The mining claims encompass approximately 48,600 acres. As of the end of 2014, it has produced 6.4 million ounces of gold. Fort Knox produced approximately 359,000, 421,641, and 379,453 gold equivalent ounces in 2012, 2013, and 2014 respectively (www.dnr.alaska.gov/mlw/mining/largemine/fortknox). Mining activities are expected to end in 2020 (Kinross Fort Knox 2014).

The True North Project is located 11 miles from the Fort Knox Mine on state and private land. It was in operation from 2001 to 2004 and produced 11.7 million ounces of ore which was hauled nine miles to the Fort Knox facility for processing. Total footprint for Fort Knox/True North was approximately 737 acres. As of the end of 2005, 530,000 ounces of gold were produced from True North. In 2009, Fairbanks Gold Mining, Inc. made a decision to forego further mining and exploration on True North, and began final reclamation. In 2010, 149 acres were graded, growth media was placed on 52 acres, and 272 acres were scarified, seeded, and fertilized. As of summer 2014 the True North site was essentially fully revegetated. Post-closure monitoring and maintenance activities continue.

Northern Rail Extension: On July 6, 2007, Alaska Railroad Corporation filed a petition to construct and operate 80 miles of new rail line from North Pole to Delta Junction. On January 6, 2010 the Surface Transportation Board issued a Decision to grant Alaska Railroad Corporation's request. Phase One construction of the rail line began in August 2011. The rail line will extend Alaska Railroad Corporation's existing freight and passenger rail service to the region south of North Pole (Surface Transportation Board 2008). The approved route parallels the southwestern boundary of the Fortymile Subunit, between Fairbanks and Delta Junction. The majority of the approved route is outside of the planning area.

Development of Infrastructure for Communities: Although human settlements have existed in Alaska for thousands of years, it was not until the 1890s that permanent westernized communities began to be developed in the Interior. Fairbanks has been the largest community in the planning area since the early 1900s. The population of the greater Fairbanks area, including Ester, Fox, and North Pole, was estimated to be approximately 97,581 in 2010 (U.S. Census). Other communities in the region include Fort Yukon, Birch Creek, Beaver, Big Delta, Delta Junction, Circle, Central, Chalkyitsik, Chicken, Dot Lake, Healy Lake, Eagle Village, Eagle, Livengood, Northway, Tetlin, Tanacross, Tok, and Stevens Village. According to the 2010 census data approximately 7,505 people lived in these communities combined.

Major transportation routes include the Alaska, Richardson, Taylor, Steese, and Elliott highways. A line of the Alaska Railroad runs from Fairbanks to Eielson Air Force Base. The Trans-Alaska Pipeline System, constructed during the 1970s, runs along the edge of the planning area from the Yukon River to Delta Junction and through the Donnelly Training Area.

Military Activities: Army lands include Fort Wainwright, Tanana Flats Training Area, Yukon Training Area, and Donnelly Training Area. Eielson Air Force Base is situated 35 miles southwest of Fairbanks, adjacent to Yukon Training Area. These areas have been used for military training since the 1940s. Fort Greely's 7,000 acres was transferred from the Army to the Space and Missile Defense Command in 2002. The Cold Regions Test Center is situated immediately to the south of Fort Greely. U.S. Army Alaska has experienced over one-hundred-twenty percent growth in

assigned troop strength since 2003. Current levels are lower than historical levels during the 1950s and 1960s (U.S. Army Alaska 2004).

Research, Monitoring, and Land Management: Research, monitoring and land management are frequent activities on non-BLM lands in the study area. Specifically, fixed-wing aircraft and helicopters are used to transport personnel and equipment, and to conduct surveys. Remote areas are also accessed by boats during the summer and snow machine during winter to conduct research, monitoring and other land management activities.

Recreation: Recreational use of fish, wildlife, and other natural resources are important aspects of the human interaction with the environment in Interior Alaska. Statewide, ADF&G provides users with more than one-half million fishing and hunting licenses each year. The mission of the ADF&G is to manage fisheries to a sustained yield; conduct quality research; enhance fisheries; maintain and increase angler access; improve fish habitat; and provide information and education to the public (ADF&G 2010). Approximately 150,000 people visit Chena River State Recreation Area annually (www.dnr.alaska.gov/parks/units/chena).

Subsistence: Subsistence use of fish, wildlife, and other natural resources (such as wood and berries) are important aspects of the human interaction with the environment in Interior Alaska. Between forty-eight and seventy percent of rural Alaska residents rely on subsistence or personal use harvest of wildlife; and seventy-five to ninety-eight percent utilize fisheries resources (ADF&G 2012). These uses occur on both federal and state lands.

4.2.4.3. Reasonably Foreseeable Future Land Use and Actions

Future Land Use

BLM: Alternative land use scenarios for BLM-managed lands are discussed in Chapter 2 and analyzed in Chapter 4 of this EIS. Conveyance of lands to the State of Alaska and Native corporations is ongoing. On a statewide basis, ninety-eight percent of the Native conveyances and ninety-five percent of the state conveyances have been completed.

Yukon Flats National Wildlife Refuge: This analysis assumes no land exchange with Doyon, Limited, and that management of Yukon Flats NWR would continue as it has during recent decades. While oil and gas development is not reasonably foreseeable on the refuge lands, some exploration from Doyon, Limited, lands could be allowed on the NWR (USFWS 2010a). Wilderness characteristics would be preserved on approximately 8.5 million acres within the refuge under the Minimal Management Category.

Tetlin National Wildlife Refuge: A land use plan for the Tetlin NWR was completed in 2008 (USFWS 2008b). Future actions would include improved public access; and restoring fisheries management to maintain natural diversity based on historic distributions of fish. Wilderness characteristics would be preserved on approximately 564,000 acres or eighty-three percent of the refuge managed under the Minimal Management Category.

Arctic National Wildlife Refuge: The Record of Decision for the Arctic NWR Revised Comprehensive Conservation Plan was signed in April 2015. It recommends designation of 12.28 million acres as Wilderness (USFWS 2015). Until Congress makes a decision, the 12.28 million acres will be managed under the Minimal Management Category. Wilderness characteristics would be preserved on ninety-eight percent of refuge lands. The portion of the refuge adjacent

to BLM-managed lands in the Upper Black River Subunit is recommended for designation as Wilderness. The Atigun, Hulahula, Kongakut, and Marsh Fork Canning rivers are recommended for inclusion in the National Wild and Scenic Rivers System. The types of activities and management actions in the refuge would remain similar to the previous 30 years. Disturbances of fish and wildlife habitats and populations would be minimized. Opportunities for trapping, hunting, fishing, and other public uses would be maintained, as would scientific research and wildlife observation opportunities.

Yukon-Charley Rivers National Preserve: The types of activities and management actions in the preserve would likely remain similar to the previous 30 years. Primary activities will include research, monitoring, and management; subsistence; and recreation. Demand for low impact use for recreation would probably increase proportionally with surrounding other federal and state lands. With a mandate to protect resources and ensure sustainability, impacts from resource uses are not likely to increase substantially. Demands for subsistence resources would remain relatively stable. Mining could occur in the future, because there are placer claims within the preserve. Access is limited, however, and large-scale or widespread mining activities in the preserve are not reasonably foreseeable. Wilderness characteristics would be preserved on 1.8 million acres determined suitable for wilderness designation. At this time there are no plans to develop in the preserve or to create additional wilderness.

Military Lands: The amount of military land in Interior Alaska is not likely to change within the next 30 years. Land use, however, would change with construction of new facilities at Fort Wainwright, Eielson AFB, the Space and Missile Defense Command at the former Fort Greely, and at the respective training areas (e.g., construction of the Battle Area Complex and associate facilities at Donnelly Training Area) (U.S. Army Alaska 2007).

State Lands and State Managed Resources: Management of state lands and resources would continue under State Area Plans and ADF&G management regimes. Land use for recreation, subsistence, and tourism would increase as local, state, and national populations grow. Activities on state lands and for state-managed resources will continue and increase in proportion to population growth and tourism. ADF&G education, nongame management and research, and wildlife viewing opportunities are expected to increase. Future actions will address human-wildlife conflicts, subsistence management, and predator management. Demands on fish and game resources for recreation and subsistence could increase between ten and fifteen percent over the next 20 years.

Native Lands: Continued oil and gas exploration on Doyon, Limited, lands is likely, but any subsequent development would be speculative. An important aspect of Doyon, Limited's, mission is to develop resources and its lands were selected for this purpose. For example, Doyon, Limited, is seeking mining exploration on its lands, especially in the Fortymile Subunit where placer gold claims are encouraged and available, and mineral materials sales would continue (Doyon 2009).

Future Activities

Oil and Gas: No oil and gas leasing is anticipated during the life of the plan. Seismic exploration could occur on high potential areas within the Steese and Upper Black River Subunits under some alternatives. Continued exploration on Doyon, Limited, lands is likely.

Placer Mining and Suction Dredging: Placer mining, including large, small and suction dredge operations would continue to occur on state and Native corporation lands at the current rates.

Placer gold production, statewide, doubled in response to an increase in gold prices in 2006. Since 2006 placer gold production has remained relatively flat (Szumigala et al. 2009). Increases in gold prices sparking increased interest in placer mining would be tempered by eventual depletion of the more accessible resources.

Lode Mining: The Pogo Mine has been in operation since 2006 and is expected to continue through at least 2019. Under the current mining rate current reserves of 1.9 million ounces are sufficient for 5.6 years, and that the mine life can be extended with 2.7 million ounces of resources and additional discovery and delineation of new resources by active exploration. Reclamation has been ongoing, and would continue concurrently with mining, and through closure of the mine and beyond.

Additional reserves remain at the Fort Knox Mine, and mining is expected to continue until 2020. Discovery of new resources could extend the mine life, and there is active exploration ongoing. Leasing could be extended for up to 55 years. Reclamation would occur after the operations have ceased, although reclamation of areas that will not be disturbed again is ongoing.

The deposit known as Money Knob could be developed into a large-scale lode mine during the life of the RMP. This measured and indicated resource was estimated to be about 15.7 million ounces of gold at a cut-off of 0.0082 ounces per ton (International Tower Hill Mines Website, September 2013). It lies on state, private, and federal lands about one mile north of the Elliott Highway. The area includes approximately 400 to 500 acres of federal mining claims which could be incorporated into an open pit or other surface infrastructure if the deposit continues toward production. Also there are over 100 federal placer mining claims on Livengood Creek which has a long history of mining activity. The mine would be an open pit. Access to the site is from the Elliott Highway. Mine roads currently exist. Total footprint of the mine would be approximately 680 acres (BLM 2014a).

The LWM prospective mine site is located 35 miles northwest of Chicken on Doyon, Limited lands. This resource contains lead, zinc, copper, and silver. This site could be developed into a large-scale lode mine during the life of the RMP. The mine would not be located on BLM-managed lands. Access to the mine would likely come from the Taylor Highway. The mine would be an open pit. Total footprint is approximately 540 acres (BLM 2009c). Although exploration activities were postponed in 2014, it is assumed this mine would be economical to develop during the life of the RMP.

Some other potential resources in the planning area include:

- Golden Summit Project immediately northeast of Pedro Dome has identified resources of 6.52 million ounces of gold – Freegold Ventures website <http://www.freegoldventures.com>
- LMS project a few miles south of Pogo has published an inferred resource of 275,000 ounces – Corvus Gold website <http://www.corvusgold.com/>
- On Tetlin Village lands, a few miles south of Tok, Contango Ore discovered mineralization in 2009 and published (in 2014) a resource of 1.1 million ounces in 9.8 million tons of ore (Indicated and Inferred) – Contango Ore website http://www.contangoore.com/pr/pr13_130716.pdf

Infrastructure and Communities: The population growth in Fairbanks and the Fairbanks North Star Borough is expected to be steady. Estimates in 2004 indicated growth from about 90,000 in the Borough to 98,000 in 2018. The number of people in rural areas including villages and small towns (except for Delta Junction and Big Delta) has declined, and these trends of growth in the larger communities and decline in the rural areas and villages will likely continue. No

major new highway projects are planned in the region, but highway upgrades and maintenance would continue. The increased number of people would result in proportionally higher activity levels in the region.

Alaska Natural Gas Pipeline: Two natural gas pipeline projects are in the planning phase. The Alaska Stand Alone Pipeline (ASAP) project would consist of a 727-mile instate, natural gas pipeline, running from Prudhoe Bay to the Cook Inlet area where it would connect into the existing Cook Inlet natural gas delivery system. The ASAP line would parallel the Trans-Alaska Pipeline System (TAPS) corridor south through the northern region of the state. At Livengood the ASAP line would proceed south towards Nenana and continue along the Parks Highway to its destination near Cook Inlet (<http://asapgas.agdc.us/>). The ASAP project would also have a 35-mile lateral line between the main pipeline and Fairbanks. A supplemental environmental impact statement is currently being prepared for this project by the Army Corps of Engineers.

The second planned pipeline, the Alaska Liquefied Natural Gas (LNG) project, is currently undergoing pre-file review under the Federal Energy Regulatory Commission. The Alaska LNG project is an export project intended to transport natural gas south from Prudhoe Bay to a proposed LNG facility on the Kenai Peninsula in Nikiski, Alaska. The Alaska LNG project corridor is currently being refined, but the final pipeline right-of-way will parallel the ASAP pipeline right-of-way for most of its 800-mile route. South of the community of Trapper Creek the Alaska LNG project proposes two alternative routes for crossing Cook Inlet to reach its terminus at Nikiski (<http://www.arcticgas.gov/alaska-lng-project>).

In addition to the pipelines, ancillary facilities such as compressor stations, temporary access roads, material sites, and construction camps will be needed. More information, along with maps of the proposed projects can be found online at: www.agdc.us (ASAP) and www.ak-lng.com (Alaska LNG).

Military: Withdrawal of additional lands for military use is not expected, but use of land and airspace will intensify. The recent addition of the Stryker Brigade and Aviation Task Force to Fort Wainwright has increased intensity of use on Army training lands and airspace. Use of military operation areas (MOAs) over the planning area will continue to occur up to the levels allowed in the Final EIS for Alaska MOAs (USAF 1995). Air Force flight training would continue with increases in low-level flight activity (helicopters). Addition of the Aviation Task Force and Grow the Army initiatives will result in an addition of approximately 2,000 soldiers, staff, and family to Interior Alaska; while Eielson AFB will lose about 2,300 personnel and staff. Aviation flight training is also expected to increase on training lands in Interior Alaska (U.S. Army Alaska 2009).

Research, Monitoring, and Land Management: Research, monitoring and land management will continue on federal, state, and Native lands. Remote areas will continue to be accessed by fixed-wing aircraft, helicopters, boats, and snowmobiles, depending on season.

Recreation: Demands on resources for recreation could increase between ten and fifteen percent over the next 20 years.

Subsistence: Demands on fish and game resources for subsistence could increase between ten and fifteen percent over the next 20 years.

Climate Change

Climate change is occurring and affecting resources in the planning area, primarily from warming seasonal and annual air temperatures. Average annual temperatures (1949–2005) increased approximately 4 degrees F. at Interior Alaska climate stations, Bettles, Big Delta, Fairbanks, and McGrath. Most of the warming occurred since the mid-1970s, with the greatest seasonal change in winter, approximately 8 degrees F., and spring about 5 degree F, and the least amount of change in autumn, 0.2 degree F. According to climate projections completed by Rupp and Springsteen (2009b) by 2040 average annual temperatures in the planning area may increase as much as 4.6 degree F.

Climate projections by Rupp and Springsteen (2009b) also indicate average annual precipitation in the planning area is expected to increase by about three inches, an 18 percent increase, by 2040. Other projected future climate scenarios predict variable but not extreme changes in precipitation for Interior Alaska (NOAA, 2013). Shulski and Wendler (2007) found there was no substantial change in annual or seasonal precipitation for Interior Alaska climate stations at Bettles, Big Delta, Fairbanks and McGrath from 1949 through 2005.

4.2.4.4. Actions Not Considered in the Cumulative Case

Oil exploration and development could occur in the future on Doyon, Limited, lands within the Yukon Flats NWR, but is considered speculative. The USFWS chose the “No Land Exchange Alternative” in the Record of Decision for the Proposed Land Exchange (USFWS 2010b). This is why the Doyon Exchange was not considered in the cumulative case.

Birch Creek Village has identified a road to provide access from the village to the Elliott Highway as part of their Long Range Transportation Plan. The road would run through Victoria Creek in the White Mountains and would be 108 miles long. The proposed road is considered speculative at this point as no permit applications or funding requests are pending.

4.3. Impacts Common to All Subunits

4.3.1. Resources

4.3.1.1. Air and Atmospheric Values

4.3.1.1.1. Air Quality and Greenhouse Gas Emissions

4.3.1.1.1.1. Air Quality

Summary of Effects

Air quality management objectives and actions are the same for all subunits and alternatives. All authorized public land management activities would meet federal and ADEC air quality standards and regulations. Both prescribed and wildland fire would be managed to minimize degradation of air quality and be coordinated through the Alaska Interagency Wildfire Coordination Group (AWFCG) of which the BLM is a member.

Potential impacts on air quality include fugitive dust from roads and mineral operations, smoke from forest management and residential wood burning, and emissions from equipment and motorized vehicles, all of which could affect human health and air quality related values including visibility. The dominant air pollutant in the planning area is particulate matter from wildland fires. Regardless of alternative, large-scale stand-replacing wildland fires frequently result in substantial and uncontrollable air quality impacts.

As the planning area is sparsely populated with no industrial facilities, it is anticipated that no substantial anthropogenic air pollutants would originate from the planning area during the life of the plan. Long-range atmospheric transport of emissions from other countries (ADEC, 2011a; Law and Stohl, 2007) occurs periodically, and this may also impair air quality and visibility.

Proposed management of the following resources, resource uses, or programs will have no anticipated effects on air quality for all alternatives and subunits, and will not be analyzed further: Cave and Karst Resources, Fish and Aquatic Species, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildlife, Special Designations, and Subsistence.

The Air Quality MOU, signed June 23, 2011, applies to oil and gas well activities on federal lands (USDA, DOI, and EPA 2011). The Air Quality MOU sets forth expectations and agreements for addressing air quality analyses and mitigation measures through the NEPA process related to federal oil and gas planning, leasing, or field development decisions. Since the Reasonable Foreseeable Development scenario projects little or no oil and gas activity within the Eastern Interior proposed planning area, the Air Quality MOU would not apply.

4.3.1.1.1.1. Effects Common to All Alternatives

The primary air quality goal under all alternatives is to comply with existing laws and regulations to meet health and safety requirements. Management objectives include minimizing degradation of air quality from prescribed fire. All other authorized activities on public lands would meet Federal National Ambient Air Quality Standards (NAAQS) and ADEC air quality standards and regulations. These management objectives would be accomplished through specific management actions, including the use of SOPs (*Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) and considerations of air quality in the wildland fire decision support system and prescribed burn plans.

Intermittent surface-disturbing activities could directly affect air quality in the short-term by generating fugitive dust, smoke, or motor vehicle emissions. Due to the widely varied specific conditions, timing, and scale of these activities, reliable quantitative estimates of particulate emissions from these activities cannot be determined; however, implementation of resource protection measures, permitting requirements, and emission control strategies, including established SOPs, to mitigate emissions would minimize impacts on air quality.

Effects from Wildland Fire Management

Impacts on air quality from wildland fire and its management activities include smoke and fugitive dust from roads and equipment, which could affect human health and visibility. The spatial distribution of wildland fire smoke would vary depending on several factors including acreage burned, fuel type, and prevailing winds and dispersion conditions. The effects on air quality from smoke and dust caused by wildland fire management activities would vary from short-term and localized, for small wildland fires, to moderate term (weeks) and widespread for large wildland

fires. During times of high fire activity, interagency efforts to manage smoke related issues from wildfires across the state will be coordinated through the Multi-agency Coordination (MAC) group. The MAC group in conjunction with ADEC may determine that new fire starts will be suppressed regardless of fire management option (AIWFMP 2010).

Effects from Forest and Woodland Products

Impacts on air quality from small-scale forest products management activities would be minimal, but could include fugitive dust from use of roads and equipment (e.g., skidders and CATs), road construction, and smoke from slash-pile burning. The effects on air quality from emissions, smoke, and dust caused by the management activities typically would be short-term and localized. Smoke resulting from a slash-pile burning would be mitigated by using the prescribed burn plan addressing smoke management and approved by the Authorized Officer. In the event more than 40 acres of vegetation is burned in a year an open burn permit with associated stipulations would be needed from ADEC. The approved prescribed burn plan would incorporate all needed stipulations from the ADEC permit.

Under all alternatives, economically feasible access to forest product harvest areas on BLM-managed lands would continue to be very limited. Air quality impacts from forest and woodland product management are expected to be short-term, of low concentration, and of limited aerial extent.

Effects from Land and Realty

The construction activities authorized under ROWs or other land use permits (e.g., communication sites, transmission lines) produce emissions. Surface-disturbing activities such as bulldozing and travel on unpaved roads result in fugitive dust, and equipment and vehicle emissions.

Effects from Minerals: Leasable, Locatable, and Salable

Minerals exploration and development activities have the potential to impact air quality. Lands would be open to oil and gas leasing, but leasing would not occur without further NEPA analysis. Interest from industry is expected to be limited for all subunits due to the lack of high-potential oil and gas resources on BLM lands. Seismic exploration could occur, but is unlikely. No solid leasable mineral development is anticipated. Impacts from mineral activities include fugitive dust from roads and emissions originating from equipment (e.g., seismic equipment).

Impacts on air quality from development of salable and locatable minerals activities are primarily due to fugitive dust from mining activities, roads, and emissions from equipment operations. Effects would typically be seasonal and localized.

Effects from Recreation

With increased pressures from growing populations and increased OHV popularity, the planning area could see significant growth in motorized recreation activity, particularly OHV use during the life of this plan. The expected increased recreational activity has the potential for degradation of air quality from recreation vehicle emissions associated with high levels of use. Between mid-August and late-September, motorized travel increases significantly during the big game hunting season. Modes of motorized access to backcountry areas include small aircraft, motor boats, OHVs, and four-wheel drive vehicles. Large-scale group activities (such as the Tok to Dawson Poker-Run, with three events per winter and 100 to 200 snowmobiles per event), may have moderate short-term impacts on air quality-related values such as visibility.

Effects from Travel Management

Expected air quality effects would typically be minor and localized for small groups. However, large-scale group activities (such as the Tok to Dawson Poker-Run, described above), may have moderate short-term impacts on air quality, including visibility. Other large-scale OHV group activities should be anticipated.

4.3.1.1.1.2. Cumulative Effects for Air Quality

Historically, smoke from wildland fire has been the primary source affecting air quality in the planning area and the poorest air quality conditions have been reported during summer, normally May through August. Otherwise pristine air conditions are typical although occasional atmospheric conditions (inversions) can trap vehicle emissions and particulates from burning wood or oil for heating during winter.

Wildland fire is generally allowed to function in its natural ecological role with wildland fire suppression activities undertaken only to protect life and property, site-specific values, or adjacent higher priority management areas. Other major land owner groups (Native, state, and federal) recognize wildland fire as an essential ecological process and natural agent of change in ecosystems. To better understand expected future wildland fire activity in the planning area, the BLM commissioned the University of Alaska Fairbanks to identify vegetation and fire regime response to projected future climate changes in Interior Alaska (Rupp and Springsteen 2009b). Their simulation results show a general increase in wildland fire activity through the end of this century in response to projected warming temperatures and less available moisture and suggest that boreal forest vegetation will change from a spruce dominated landscape to a more deciduous-dominated landscape. Changes in the projected cumulative area burned suggest that over the next 30-40 years the planning area will experience a rapid increase in wildland fire activity and change in vegetation (Rupp and Springsteen 2009b).

In spite of the shift in vegetation towards less flammable younger age stands and deciduous species, the simulation results indicate that there will be more frequent wildland fires, resulting in an overall increase in area burned annually. Increased wildland fires, over the next 20 to 30 years in particular, are likely to have substantial adverse air quality impacts. The Fire Management Program would adapt management activities as needed in response to changes in climate over the life of the RMP.

As the planning area is sparsely populated with no past, current, or planned industrial facilities, it is anticipated that no substantial anthropogenic air pollutants would originate from the planning area during the life of the plan. However, long-range atmospheric transport of emissions from other countries (Law and Stohl, 2007) occurs periodically and may impair air quality and visibility. Cumulative air quality impacts from resource management programs and activities are not expected to be significant.

4.3.1.1.1.2. Greenhouse Gas Emissions

Summary of Effects

This section provides information on current and projected Greenhouse Gas (GHG) emissions common to all subunits within the planning area. It addresses “*How current and future*

BLM-authorized actions could potentially affect climate change, as indicated by estimated GHG emissions.”

As discussed in section 4.2.4.3 *Reasonably Foreseeable Future Land Use and Actions*, no substantial industrial development, fossil fuel development, or changes in land use/land cover are projected to occur from BLM-authorized activities. In particular, no oil and gas leasing or large lode mine development is anticipated during the life of the plan. Hence, no substantial changes are expected in GHG emission levels compared to current GHG emissions under all alternatives during the life of the plan.

GHG emissions associated with local communities (Table 3.6) would continue to be the largest anthropogenic source of GHG emissions in the planning area. In 2010 the Fairbanks and Delta areas contributed the most GHG emissions: 1,893,205 and 196,382 MTCO₂Eq., respectively. The Eagle area, at 12,803 MTCO₂Eq., and Fort Yukon area at 42,129 MTCO₂Eq. contributed the least emissions. The population within the planning area is projected to increase by ten to fifteen percent during the life of the plan, likely resulting in a similar increase in community related GHG emissions.

Seasonal placer mining is the single largest BLM-authorized industrial activity in the planning area. In 2014 active placer operations (exploration, suction dredge, small and large placer mines) on BLM-managed lands contributed, in total, approximately 4,410 MTCO₂Eq. (Table 3.7); less than 20 percent of the 25,000 MTCO₂Eq. annual emissions level, above which quantitative reporting of GHG emissions is recommended by CEQ (2014). For comparison, total GHG emissions for all subunits under Alternative D, the most pro-development alternative, were estimated at 8,007 MTCO₂Eq. annually, well below the 25,000 MTCO₂Eq. reporting limit.

Estimates of GHG contributions from travel and transportation activities, including emissions from OHV use, will be addressed in the forthcoming travel management plans. However for context, based on anecdotal reports from recreation staff, GHG emissions from recreation OHVs would likely be less than half of the annual emissions associated with the placer-mine industry.

A major portion of GHG emissions within the planning area are a result of uncontrolled wildland fires, originating either within or outside of the planning area, and not a result of BLM activities. Based on an annual average of 331,456 acres burned (AICC 2015) within the planning area, annual GHG emissions from wildland fires are estimated at 1,640,243 MTCO₂Eq. Annual emissions from prescribed burns are estimated at 273 MTCO₂Eq, based on an average of 518 acres of prescribed burn annually.

4.3.1.1.2.1. Effects Common to All Alternatives

As stated in section 4.3.1.1.1.1 Air Quality, proposed management of the following resources, resource uses, or programs would have no major foreseeable effects on GHG emissions in the planning area and will not be analyzed further: Cave and Karst Resources, Forest and Woodland Products, Fish and Aquatic Species, Lands and Realty, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildlife, Special Designations, and Subsistence.

Effects from Locatable Minerals

Estimated GHG emissions for projected placer mine operations were calculated utilizing the BLM Solid Mineral Production Sand and Gravel Mining and Processing Emissions Calculator found

in the BLM Greenhouse Gas & Climate Change NEPA (GHGCC-NEPA) toolkit, an internal, web-based tool (<http://ghgtoolkit.blm.gov/>) that contains a suite of greenhouse gas calculators for specific resource development activities.

GHG emission calculations were based on the type, quantity, load, and period of equipment used annually for projected placer mine activities outlined in Tables 4.2 through 4.5 of the RMP. Activities in the tables are summarized under four categories: 1) Mining Exploration, 2) Suction Dredge Operations, 3) Small Placer Operations and 4) Large Placer Operations. We determined equipment type, quantity, load, and period of equipment use inputs based on placer mining handbooks (McCulloch et. al., 2003; Entrix, Inc, 1986), the Reasonable Foreseeable Development – Mine Cost and Impact Model report (2009) by Scott Stebbins, Mining Engineer with Aventurine Engineering, Inc. as well as personal communications with experienced Alaska engineers and operators including Chris Roach PE Civil Engineer, Anchorage, July 2015; Don Kiell, Mining Engineer, Fairbanks July 2015, and Dick Loud, Placer Mine Owner/Operator, August 2014.

Average annual GHG emissions for Small Placer Operations were calculated using the GHGCC-NEPA toolkit. For the 3 other mining operation categories GHG emissions were calculated using the Small Placer Operation GHG emission output and an equivalence factor. Based on estimates in the Stebbins 2009 report and input from sources listed previously, equivalence factors are as follows: Large Placer Operations at (4x), Suction Dredge Operations at (0.2x) and Exploration Operations at (0.4x) the average annual GHG emission of a Small Placer Operation. As an example, annual GHG emissions from one Large Placer Operation would be equivalent to the combined annual emissions from four Small Placer Operations.

Total annual GHG emissions from all projected placer mine related activities, including exploration, suction dredge, and small and large placer mine operations for all subunits and under all alternatives are summarized in Table 4.6.

Table 4.6. Estimated Annual Greenhouse Gas Emissions by subunit from projected placer-mine operations.

Planning Subunit	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
	GHG (MTCO ₂ Eq.)	GHG (MTCO ₂ Eq.)	GHG (MTCO ₂ Eq.)	GHG (MTCO ₂ Eq.)	GHG (MTCO ₂ Eq.)
Fortymile	2,708	3,419	3,656	4,262	3,419
Steese	1,154	1,228	2,486	3,197	1,228
Upper Black River	0	0	0	0	0
White Mountains	548	548	548	548	548
Subtotals	4,410	5,195	6,690	8,007	5,195

Annual GHG emission levels from projected placer-mine operations in all subunits varied from about 4,410 MTCO₂Eq. under Alternative A to an estimated 8,007 MTCO₂Eq. under Alternate D. The estimate level of GHG emissions from projected placer operations by subunit and alternative serves as a reasonable proxy for assessing potential climate impacts, and provides decision makers and the public with useful information for a reasoned choice among alternatives. Nonetheless, the total annual GHG emissions levels estimated for projected placer-mine operations for all alternatives and subunits are well below the 25,000 MTCO₂Eq. annual emissions reporting level recommended by CEQ (2014) for quantitative reporting of GHG emissions and will not be analyzed further.

4.3.1.1.2.2. Cumulative Effects of Greenhouse Gas Emissions

Because the planning area is sparsely populated with no past, current, or planned industrial facilities, it is anticipated that no substantial GHG emissions or anthropogenic air pollutants would originate from the planning area during the life of the plan.

Current trends in automobile and OHV technology are towards reducing emissions. Thus, although OHV use is projected to increase by ten to twenty-five percent, cumulative impacts to GHG emission levels from OHV travel are not expected to be measurable. Similarly, mining activity is projected to moderately increase, but the associated impacts to air quality and GHG emissions from current and projected activity are expected to be negligible. New mining operations would likely employ equipment with improved emissions.

Long-range atmospheric transport of emissions from other countries (Law and Stohl, 2007; Shaw, 1995) occurs periodically with uncertain cumulative impacts on resources. Based on the low level of projected development, cumulative GHG emission levels from BLM resource management programs and activities are expected to be relatively low.

Estimated GHG emissions for a maximum number (86) of annual wildland fires over the planning area prior to 2015 with an average annual acreage burned (331,456 acres from 1985–2014) were calculated along with the annual average prescribed burn acreage within the planning area (518 acres) using the BLM National Operations Center (NOC) toolkit (BLM NOC, 2012). This toolkit also contains a suite of greenhouse gas calculators for specific resource development activities. The results indicate that for all alternatives, the annual GHG emission level would be 1,640,516 MTCO₂Eq. Of this total 273 MTCO₂Eq. are contributed from prescribed burns within the planning area and 1,640,243 from wildland fires within the planning area. Fire history statistics were obtained from the Alaska Interagency Coordination Center's fire history data set (AICC 2015).

The BLM NOC toolkit calculates GHG gas emissions estimates as well as emissions estimates for criteria air pollutants, volatile organic compounds, and hazardous air pollutants. This toolkit compliments the BLM GHGCC-NEPA toolkit as another means of estimating air pollutants based upon specific resource activities.

A large majority of GHG emissions are a result of uncontrolled fires originating either within or outside of the planning area and not a result of BLM activities. The percentage of annual prescribed fire acreage burned within the planning area is 0.16 percent of the acres burned (518) resulting from wildland fires.

The amount of estimated annual placer mining GHG emissions for Alternative D, the alternative with the highest MTCO₂Eq. value (8,007 MTCO₂Eq. from Table 4.6), compared to those contributed by wildland fires (1,640,243 MTCO₂Eq.), is extremely small (0.49 percent).

4.3.1.1.2. Climate Change

This section provides information on known and projected climate change impacts common to all subunits within the planning area. It addresses *“How current and future projected climate change, due to regional and global conditions, will impact BLM-managed resources and current and future BLM-authorized actions in the planning area.”*

Summary of Effects

The BLM contracted with the University of Alaska, Scenarios Network for Alaska Planning to develop a climate change scenario for the planning area (Rupp and Springsteen, 2009b). The results of this work are summarized in a report available online at <http://www.snap.uaf.edu/>. The outcomes from this report were used during the development of the Draft EIS, to help describe the existing environment and to analyze impacts of the alternatives. These predictions were also used to help develop Standard Operating Procedures (SOPs) and Fluid Mineral Leasing Stipulations that would be adaptable over time.

The model results of Rupp and Springsteen (2009b) are based on the A1B carbon dioxide emissions scenario (IPCC, 2000), and assume a steady increase in carbon dioxide emissions from fossil fuel combustion over the first several decades of the 21st century, followed by a gradual decline in emissions as several kinds of low-emission energy alternatives become more prevalent. Their climate projections are in broad agreement with other global climate model results for Interior Alaska (Chapman and Walsh, 2007; NOAA, 2013).

Projected changes in climate for the planning area reported by Rupp and Springsteen (2009b) include:

- Annual average temperatures are projected to increase over the coming decades at an average rate of about one degree F per decade from the 1961–1990 historic 30-year average (about 24 degrees F.). Average annual temperature is expected to rise by about 6.4 degree F by 2049 and as much as 9.4 degree F by 2099.
- Average annual precipitation (about 16 inches) is expected to increase to 19.6 inches by 2049 and to 21.1 inches (about thirty percent) by 2099, but it will not be enough to offset increases in potential evapotranspiration in the Eastern Interior, especially in the last half of this century.

These projected future climate changes suggest the recent (1949–2005) warming trend in Interior Alaska (Wendler and Shulski 2009) will continue over the next few decades with similar resource impacts as discussed in section 3.2.1.3.4 Climate Change Impacts.

Current and future projected climate change impacts that affect BLM management actions and resources are primarily related to a warming climate and include thawing permafrost, increased length of growing season, and increased wildfire frequency. The BLM utilizes Adaptive Management as a tool in managing lands and resources to predict, mitigate, implement, monitor, and adapt to climate change impacts as well as in NEPA analysis of current and future BLM-authorized actions in the planning area.

Effects of Thawing Permafrost

Much of Interior Alaska is underlain by discontinuous permafrost—frozen ground with highly variable ice content that restricts water drainage and strongly influences landscape water balance as well as the design and maintenance of infrastructure. Permafrost thaw results in the settling and/or slumping of soil and is one of the serious impacts of a warming climate in Alaska.

Uneven sinking of the ground in response to permafrost thaw causes major issues for various types of infrastructure. Roads, runways, and buildings may shift, break, or collapse as the ground beneath them becomes soft and sinks (Karl et al. 2009).

Landscapes in Interior Alaska are getting drier. On average, lakes have decreased in area in the last 50 years (Roach et. al., 2011) due to a combination of permafrost thaw, greater evaporation in a warmer climate, and increased soil organic accumulation during a longer season for plant

growth. Future permafrost thaw will likely increase lake area where permafrost is continuous and decrease lake area in places where the permafrost zone is more fragmented (Avis et. al., 2011).

A continuation of the current drying of Alaskan lakes and wetlands may affect waterfowl management. Interior Alaska provides breeding habitat for millions of migratory birds that winter in more southerly regions of North America and on other continents.

Numerous observations suggest increased surface erosion associated with thawing permafrost and melting ground ice resulting in *thermokarst* development in low gradient areas and increased thermal erosion on hill slopes—detachments of seasonally thawed layers, especially after wildfire (Gooseff et. al., 2009).

Thawing permafrost increases permeability of previously frozen soils and changes the distribution of surface waters across the landscape through increasing or decreasing wetland surface area depending upon site-specific conditions (Hinzman et al. 2005).

Effects of Increased Length of Growing Season

The length of the growing season in Interior Alaska has increased on average from 83 to 123 days (45 percent) over the last century (Wendler and Shulski, 2009). Changes in dates of snowmelt and freeze-up associated with the longer growing season benefit agriculture and forestry and decrease annual use of heating fuels with warmer temperatures. Negative impacts may include reduced water storage, altered timing of the spring break-up, and increased risk of more extensive wildfire and insect outbreaks, as well as disrupted seasonal migration of birds and other animals (Chapin, et. al., 2014).

Effects of Increased Wildfire Frequency

During the decade of the 2000s, an average of 1,890,000 acres per year were burned in the interior sections of Alaska (17 percent of the landscape), which is 50 percent higher than in any previous decade since the 1940s (Kasischke et al. 2010). The increase in fire severity has occurred during a period of warmer spring seasons associated with earlier snowmelt, drying of wetlands, and lengthening growing seasons. Increasing temperatures (more specifically, a decrease in occurrence of extreme cold temperatures) have resulted in increased over-winter survival of bark beetles, and a consequent increase in the number of acres of forest destroyed by these insects. Dead trees combined with warmer, drier conditions leave the forests more vulnerable to wildfires (Karl et al. 2008). It is also thought that deeper active layers in permafrost areas allow fires to persist in the organic horizons of black spruce forests (Kasischke et al. 2010). The increase in fire occurrence has coincided with, and likely has been at least partially driven by, increases in lightning frequency since the 1990s (Faruch et al. 2011). More extensive and severe wildfires could shift the forests of Interior Alaska during this century from dominance by spruce to broadleaf trees (Barrett, et. al., 2011).

4.3.1.1.2.1. Cumulative Effects of Climate Change

The climate model results from Rupp and Springsteen (2009b) show Eastern Interior Alaska is projected to become warmer and drier over the next century. Warmer temperatures and a longer growing season are expected to increase evapotranspiration enough to outweigh a regional increase in precipitation. Their simulation results show a general increase in wildland fire activity through the end of this century in response to projected warming temperatures and less available moisture and suggest that boreal forest vegetation will change from a spruce dominated

landscape to a more deciduous-dominated landscape. In spite of the shift in vegetation towards less flammable younger age stands and deciduous species, the simulation results indicate that there will be more frequent wildland fires, resulting in an overall increase in area burned annually.

Increased wildland fire frequency would likely release carbon to the atmosphere which would be converted to carbon dioxide. Release of carbon from thawing permafrost soils is expected to increase the amount of CO₂, perhaps significantly (Drake, et., al, 2015). However, increased air temperatures, length of growing season, and expanded growth of forests in former permafrost-rich areas would all act as carbon sinks. For the purposes of this plan, the net contribution to the effects of climate change from atmospheric carbon is expected to be very low.

It is assumed that climate change will continue to occur during the life of the plan and through adaptive management the BLM would mitigate impacts to resources to the extent practicable. Changes in climate will likely have profound impacts on the condition and health of wildlife habitat, permafrost stability, wildland fire risk, and contribute to the likelihood of wetlands, streams, and lakes drying.

4.3.1.2. Cave and Karst Resources

Summary of Effects

Impacts to the cave and karst features are expected to be negligible. The significant caves are difficult to access because of their remote locations. Extremely sensitive or fragile resources were not identified during cave inventories. The recreation settings, special area designations, and travel management prescriptions for lands surrounding significant caves would help protect cave and karst features, as would active management of cave and karst resources.

Proposed management of the following resources, resource uses, or programs would have no anticipated effects on cave and karst resources for all alternatives and subunits, will not be analyzed further: Air and Atmospheric Values, Fish and Aquatic Species, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildlife, Forest and Woodland Products, Lands and Realty, Minerals Management, Renewable Energy, and Subsistence.

4.3.1.2.1. Effects Common to All Alternatives

Effects from Cave and Karst Resources

Nationally, management of cave and karst resources has trended toward more regulation to protect sensitive resource values. Additional protection could occur if sensitive resource values were discovered. Although, these protections would generally not be needed because the current and proposed land designations and management provide sufficient layers of protection. Actively managing to protect cave resources would have a minor beneficial effect.

Effects from Cultural and Paleontological Resources

Cultural and paleontological resources are often associated with caves. During cave inventories, no archaeological remains and only a few paleontological remains were found. The potential exists for additional cultural sites and paleontological resources to be found associated with caves, but it is thought to be unlikely. The lack of discovery does not preclude a future chance of discovery; and the occurrence of paleontological or cultural resources would initiate the

protocols for determining if the cave qualifies as a “Significant Cave.” Management of cultural and paleontological resources would be beneficial and complementary to cave management.

Effects from Recreation and Travel Management

Possible direct impacts include the removal of cultural or paleontological resources or vandalism. Managing the cave and karst areas for a Primitive to Backcountry RSC setting, as in the Steese and White Mountains subunits, would provide additional protection to these areas. Known cave and karst areas would be managed for minimal trails and facilities, and access would continue to be limited OHV designations. These decisions would likely limit increases in visitation, reducing the potential for damage or vandalism. Effects would be low because of the low number of visitors to the area and because these areas are remote and difficult to access regardless of the OHV designations.

Effects from Special Designations

The significant caves in the White Mountains Subunit are located within Limestone Jags RNA under all alternatives. Caves in the Upper Black River Subunit are within a proposed ACEC under Alternatives B, C, D, and E. Caves in the Steese Subunit are within a proposed ACEC under Alternatives B, C, and D. Designation as an ACEC could potentially confer additional protections on the cave and karst areas. However, this effect would likely be minimal as the remote location of the caves, other proposed management for these areas, and existing designations (e.g., Steese National Conservation Area and White Mountains NRA) provide sufficient protection.

4.3.1.3. Cultural and Paleontological Resources

Summary of Effects

Proposed management of the following resources, resource uses, or programs will have no anticipated effects on cultural and paleontological resources for all alternatives and subunits, and will not be analyzed further: Air and Atmospheric Values, Cave and Karst Resources, Fish and Aquatic Species, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildlife, Renewable Energy, Special Designations, and Subsistence.

There are several categories of cultural resources, including historic and prehistoric archaeological sites, Traditional Cultural Properties, and Native American Sacred Sites. The latter two may or may not have physical manifestations. No Traditional Cultural Properties or Sacred Sites are known in the planning area, nor were any identified during the scoping for this plan. Only those resource uses or programs that can directly or indirectly impact physical objects or arrangements of cultural and paleontological items will be analyzed in this EIS.

Surface and subsurface disturbances can directly and adversely impact archaeological and paleontological sites. Such disturbances can permanently disturb/destroy the fossils, artifacts, features, and architecture found at sites, or else destroy the spatial relationships among them. Any activity that alters or destroys the objects or spatial relationships in a cultural or paleontological site consequently destroys our ability to interpret and understand the past. A variety of resources, resource uses, or programs outlined in this plan have the potential to result in surface and subsurface-disturbing activities, and thus may directly and adversely impact cultural and paleontological sites, regardless of subunit and alternative considered. These include Fire Management, Minerals, Recreation, Travel Management, and Hazmat. Regardless of the actual

amount of acreage involved per subunit or alternative, the actions involved with these programs can and do directly disturb surface and subsurface sites in the following ways: firefighters building firebreaks with mechanized equipment or hand tools; drilling, testing, or open pits associated with mineral development, and the construction of roads to facilitate such actions; construction of trails, boat landings, and other recreational infrastructure; and cleaning up hazardous wastes at historic-era sites. In general, the potential for direct adverse impacts quantitatively increases from Alternative B, to Alternatives C and E, and then to Alternative D. The impacts in Alternative A vary per subunit, alternative, and program, but would generally be less than Alternative D.

Cultural and paleontological sites could be indirectly affected by programs, including Lands and Realty, Forestry, Minerals, Fire Management, and Travel Management, that allow or facilitate access of people onto the public lands; and in particular, to areas that have been previously isolated. One prime example is the construction of new access routes to previously isolated lands. These provide new avenues of access for users of the public land, such as recreation users and hunters. With more users accessing BLM-managed lands, there will likely be an increased number of people finding cultural and paleontological resources and adversely impacting them, either maliciously and intentionally, or else cumulatively and unintentionally. The potential for indirect adverse impacts for most subunits and alternatives increases from Alternative B, to Alternatives C and E, and then to Alternative D. The impacts in Alternative A vary per subunit, alternative, and program, but would generally be less than Alternative D.

4.3.1.3.1. Effects Common to All Alternatives

All undertakings occurring on BLM lands would be evaluated to identify their effects on cultural and paleontological resources, as well as the mitigation of adverse effects on significant sites, as prompted by current federal regulations. Minimally, Level I inventories (literature searches) would occur for all undertakings to assess the potential effects. Level III inventory (intensive on the ground survey) would occur when the potential for cultural resources are considered to be high or surface disturbance is likely. If new cultural resources are found and they cannot be avoided by the undertaking, they would be evaluated for significance, or eligibility to the National Register of Historic Places. A similar process for identifying and mitigating significant paleontological resources would also occur through consultation with experts in the field.

Effects from Lands and Realty

The authorization of new roads, trails, or ROWs, which would causally lead to surface-disturbing activities by other resource users or programs, have the potential to directly and adversely impact cultural and paleontological resources. In addition, there could be an indirect effect on surficial cultural resources; with the creation of new access routes, more people would have access to BLM-managed lands which were previously inaccessible. There would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

Land disposal would result in such lands no longer having federal laws to protect any cultural or paleontological resources on them. If the transfer occurs to the State of Alaska, some measure of protection is assumed because the state has its own heritage resource laws. A programmatic agreement currently exists between the BLM and the State of Alaska regarding cultural resources and BLM's responsibilities under "Section 106" of the National Historic Preservation Act [54 USC 306108] ("Programmatic Agreement Under the National Historic Preservation Act for Land Transfers to the State of Alaska"). No such written agreement exists when dealing with the transfer

of lands to private entities such as Native corporations, Native villages, or individuals. Cultural resources become the property of the private entity, and can be used, or not, in whatever capacity at the discretion of the landowner. As a result, transfer of lands out of federal jurisdiction to private entities could result in direct and indirect impacts to cultural and paleontological resources.

In all subunits and under all action alternatives (B, C, D, and E), ANCSA 17(d)(1) withdrawals are recommended for revocation. Withdrawal revocation would have the effect of opening some lands to new locatable mineral entry and mineral leasing. Lifting current withdrawals would indirectly affect cultural and paleontological resources where new lands are opened to surface-disturbing activities (such as mining and road construction) which in turn would have the potential to directly and adversely affect surface and subsurface cultural and paleontological resources. The specific effects from withdrawal actions are discussed more fully under Locatable Minerals.

Effects from Wildland Fire Management

Wildland fire suppression and fuel reduction activities have the potential to directly and adversely affect cultural resources through consumption by fire of surface structures and artifacts made from combustible materials, to disturbance of sub-surface artifacts either directly from fire or else indirectly from resulting tree-throws, to direct disturbance or destruction of surface or subsurface cultural resources from wildland fire suppression activities (e.g., movement of mechanical equipment; creation of firelines down to mineral soil), or indirectly by creating easier access to previously isolated areas by the construction of firelines.

Effects from Hazmat and Abandoned Mine Lands

Hazardous materials are sometimes found at historical-era sites, and their cleanup could adversely affect cultural resources, especially if subsurface disturbance is required as in the case of soil contamination. Abandoned Mine Land sites, by definition, are cultural sites. Cleanup and/or addressing other safety concerns at such sites could adversely affect them, especially if subsurface disturbance is required.

Effects from Fluid Leasable Minerals

In terms of fluid leasable minerals (e.g., oil and gas), all lands are presently withdrawn and there are no existing leases. As a result, there are presently no effects to cultural and paleontological resources. Acreage is technically opened up to leasing in each of the action alternatives, increasing in amount from Alternative B, to E, to C, and then to Alternative D. However, leasing would not occur under any alternative without further NEPA analysis. Interest from industry is expected to be limited on even higher potential areas. If a nomination for a lease does occur, a new NEPA analysis of its impacts on cultural and paleontological resources would be performed at that time. Since it is assumed that no leasing, exploratory drilling, or development will occur during the life of this plan, there would be no effects to cultural and paleontological resources at this time under any of the alternatives in any subunit. Seismic exploration could occur on high potential lands in the Steese and Upper Black River subunits. This seismic exploration would have minimal to no impact to cultural or paleontological resources for any alternative because it would be conducted in the winter using low pressure vehicles.

Effects from Solid Leasable Minerals

In terms of solid leasable minerals (e.g., coal, potassium, sodium, phosphate), all lands are presently withdrawn and there are no existing leases. As a result, there are presently no effects

to cultural and paleontological resources. Acreage is opened up to leasing in each of the action alternatives, increasing in amount from Alternative B, to Alternatives C and E, to Alternative D. Interest from industry is expected to be limited because of low or no occurrence potential, and/or lack of economical access. Since it is assumed that no leasing would occur during the life of this plan, there would be no effects to cultural and paleontological resources under any of the alternatives in any subunit.

Effects from Salable Minerals

Mineral material sales (e.g., sand and gravel), as with all surface-disturbing activities, would have the potential to adversely impact all manner of cultural and paleontological resources. Acreage is closed to salable mineral extraction under each of the action alternatives. It is estimated that no more than 200 additional acres of authorized disturbance on BLM lands would be required to meet in-house material demands over the next 20 years, regardless of the alternative selected. These sites would most likely be located near highways, roads, or existing BLM facilities. In sum, there is a potential to directly and adversely impact cultural and paleontological resources by this program, although the effects would likely be limited, due to the limited demand for mineral materials on BLM lands.

Effects from Forest and Woodland Products

Under Alternative A, there are presently relatively few restrictions on the use of timber and forest products in the planning area. All lands (6,523,000) are open to personal use of timber and forest products, to one degree or another, whether by locals or the general public. Commercial use of forest products is allowed everywhere excepting the Steese National Conservation Area and the White Mountains NRA. All lands are open to commercial timber sales excepting the Steese National Conservation Area and the White Mountains NRA; however, there has been no demand for these types of sales. Subsurface cultural and paleontological resources would not be affected by the harvesting of timber and forest products, provided standard stipulations about extraction methods are adhered to. However, there could be an indirect effect on surficial cultural resources; as more resource use permittees access BLM lands, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Personal use of forest products is open to all users throughout the planning area in all of the Alternatives, B through E. Otherwise, Alternatives B through E vary only by the amount of acreage opened up to each of the other general types of personal and commercial use (i.e., personal use and commercial use of timber, and commercial use of forest products). Similar to Alternative A, direct impacts to subsurface cultural and paleontological resources by opening up new acreage to forest and woodland products use, relative to Alternative A, would be limited by employing SOPs that stipulate non-ground disturbing extraction methods. Indirect effects upon surficial cultural resources may increase in Alternatives that allow increased acreage to be opened up to different uses. Similar to Alternative A, increased acreage can equate to increased numbers of users on the land, which can equate to increased potential for adversely affecting surface visible cultural resources. However, even in areas open to these uses, future commercial sales would be unlikely due to the lack of high-value timber in the planning area, and overall limited access.

4.3.1.3.2. Cumulative Effects

Cumulative impacts to cultural and paleontological resources can occur through incremental degradation of the overall resource base throughout the planning area from any of the sources of direct or indirect effects described in any of the Cultural and Paleontological Resources sections presented in this plan. Excepting especially rare or unique cultural site types or paleontological localities, the destruction of any one, two, or three, etc., sites of any particular age or functional type would not likely impact the overall, areal resource base, as there would likely be more of any similar type of site elsewhere in the planning area. However, cultural and paleontological resources are a non-renewable resource and the loss of any one of them is one less from a finite total. There would eventually be a point at which the cumulative overall destruction of sites would limit management options within any defined area, such as the planning area. Any resource, resource use, or program that has direct or indirect adverse effects to cultural resources contributes to this overall loss over time.

A second type of cumulative impact is that which can occur at any individual cultural site or paleontological locality. Many low-level, seemingly minor, impacts that may not be individually adverse to a site can slowly and cumulatively grow into a larger direct adverse effect over time. Examples of these types of activities include walking or camping within, through, or around sites and features. Each individual footprint upon old wooden structural architectural elements may not appear to have an impact upon the site, but quantify that same effect by dozens of separate visitors, and those same structural elements slowly get ground into dust. Likewise, the slow, accrued movement of stones that form parts of tent rings or hearths by repeated visitation will eventually obliterate such features, even if all the original stones are left on site. Similarly, visitors to sites often feel an urge to connect with the past by removing a piece of the site when they leave, like an artifact. Removal of a one, two, or three, etc., artifacts would not likely effect overall site interpretation. However, even if artifacts are not diagnostic or seemingly “important” to overall site interpretation, there would come a point, if enough artifacts are removed, when the cumulative removal of enough artifacts from a site would irreversibly affect any interpretations that can be made about that site. Any resource use or program that promotes increased use and visitation upon public lands may be inadvertently adversely impacting cultural and paleontological sites in this cumulative manner.

4.3.1.4. Fish and Aquatic Species

Methods of Analysis

Indicators: Indicators are used to identify the level of impact. For aquatic resources, fish, and Special Status Species, the indicators used include water quality, riparian vegetation, streambank stability, and stream miles open to locatable mineral entry.

Methods and Assumptions: Potential impacts on aquatic resources, fish, and special status fish from each Alternative are based on interdisciplinary team knowledge of the resources and the planning area and information gathered from the public during the planning process. Impacts were identified using best professional judgement and were assessed according to the following assumptions:

- Healthy riparian areas are critical for properly functioning aquatic ecosystems. Improvements or protection of riparian habitats would indirectly improve or protect aquatic habitats and

fisheries. Adverse impacts to riparian habitats would indirectly degrade aquatic habitats and fisheries;

- Emphasis and management opportunities for maintenance or improvement of fish habitat conditions would occur in designated Conservation and Restoration Watersheds;
- Not all of the anadromous streams or extent of anadromy has been documented within the planning area;
- The lifting of mineral withdrawals will result in an increased number of placer mining operations with the potential to adversely effect fish and aquatic resources;
- All BLM land use authorizations would incorporate appropriate project design, SOPs, and mitigation to not result in any adverse long-term (>20 years) trends for water quality and aquatic habitats at the watershed level (6th level HUC).
- Reconstructed stream channels will be designed by an individual(s) trained and qualified for the task and the channel will be built as designed.
- Reclamation techniques will use an “adaptive management” approach to address potential problems allowing for corrective actions should they become necessary. These techniques will ensure applicable performance standards and required conditions are met at the conclusion of operations.
- The timeframes associated with long- and short-term impacts assume that channel equilibrium is maintained.
- The reasonably foreseeable development scenario for small- and large-scale placer mines (BLM 2015) was used to estimate the number of stream miles that would be open to locatable minerals under each Alternative.

Summary of Effects

Fish and aquatic resources are at the top of a hierarchical framework (pyramid) of stream functions (Harman et al. 2012). Starting at the bottom and working up, these functions include hydrology, hydraulics, morphology, physiochemical, and finally biology (fish and aquatic life). Within this hierarchical framework, higher-level functions are supported by lower-level functions (Harman et al. 2012). For example, the biological component cannot function without the physiochemical function, and so on. Since this is a hierarchical framework, land use activities that diminish one or more of the lower level stream functions in the pyramid will adversely effect fish and aquatic resources. As such, the recovery of lower level functions is necessary to restore biological functions.

More specifically, fish and aquatic resources would be primarily affected by surface-disturbing activities which alter stream channels and floodplain connectivity, remove or impair riparian vegetation and function, or result in soil erosion and sedimentation to fish and aquatic habitat. These activities often include placer mining and road and trail construction that occur within or adjacent to riparian areas or waterbodies. Activities causing extensive stream channel alteration and riparian degradation (e.g., instream mining) will result in unavoidable short (5–10 years) and long-term (10–20 years) adverse impacts to fish and aquatic resources. Activities that disrupt stream channel equilibrium will initiate a series of channel adjustments (e.g., slope and sinuosity) which in turn can adversely impact aquatic resources both up and downstream of the activity. These impacts can persist for decades and may substantially increase the number of stream miles impacted far beyond the impact site.

The potential for and level of impact on fish and aquatic resources is dictated by the success and adequacy of protective measures such as maintaining riparian vegetation in proper functioning condition and application of mineral withdrawals, as well as SOPs and reclamation procedures.

The No Action Alternative (A) would provide the greatest protection to fish and aquatic resources within the planning area because all four subunits are currently closed to new locatable mineral entry.

Alternatives B, E, C, and D open increasingly more acres and stream miles for locatable mineral entry, respectively. Alternative D would have the greatest potential to impact fish and aquatic resources.

4.3.1.4.1. Effects Common to All Alternatives

Proposed management of the following resources/resource uses/programs would have no anticipated impacts to fish and aquatic habitats and will not be analyzed further: Air quality, Cave and Karst Resources, Cultural and Paleontological Resources, Special Status Species, Visual Resources, Renewable Energy, Social and Economic Conditions, and Subsistence.

Effects from Non-Native Invasive Species

Invasive species can adversely effect fish and aquatic resources through habitat change, predation, parasitic behavior, the introduction of disease, competition for food and space, and hybridization sometimes leading to the extinction of native species (Simberloff 2000).

Efforts in Alaska are mostly focused on the prevention of introductions, since much of the state remains unaffected by aquatic invasive species. However, numerous pathways exist in Alaska that could facilitate the introduction of aquatic invasives. These pathways include, but are not limited to, fish farms, intentional movement of species across basins, ship traffic and ballast water discharge, and sport angler gear contamination (Fay 2002). The establishment of introduced invasive species, given Alaska's climate, depend on the species origins. Global climate change may increase the susceptibility (Union of Concerned Scientists 2005) and likelihood of establishment. Several of the high threat species identified by Fay (2002) pose a risk to the aquatic environments and species within the planning area. These high threat species include the New Zealand mudsnail (*Potamopyrgus antipodarum*), zebra mussels (*Dreissena polymorpha*), and Whirling disease (*Myxobolus cerebralis*). Additionally, several aquatic invasive plant species, such as Japanese knotweed (*Polygonum cuspidatum*) and Eurasian water-milfoil (*Myriophyllum spicatum*), also could become established in the planning area and impact aquatic and riparian habitats.

The threat of non-native invasive species within the planning area is very real. In 2010, a substantial infestation of an invasive aquatic plant, *Elodea nuttallii*, was discovered in Chena Slough (Fairbanks area). This was the first time an invasive aquatic plant had been documented in Interior Alaska. It's thought to have been introduced by someone dumping aquarium water into Chena Slough. In other countries species of *Elodea* have "filled up" waterways with dense growths of plant material. *Elodea* adversely effects fish and fish habitat by displacing native flora and fauna, reducing stream flow, increasing sedimentation, and reducing recreational fishing opportunities. If *Elodea* continues to spread in Interior Alaska, it could have significant negative impacts on fish and aquatic resources within the planning area. *Elodea* is readily introduced and spread by boats, personal watercraft, and float planes. Local experts are currently working on plans to eradicate and stop the spread of *Elodea* in the Fairbanks area.

The costs associated with controlling invasive species is significant. For example, annual costs associated with Zebra mussels in the U.S. are estimated to be one billion dollars (Pimentel et al. 2005).

Considering the economic and cultural values of fisheries resources in Alaska, the costs associated with controlling aquatic invasive species would be substantial. Martinez et al. (2007) noted that the removal of invasive species may be an extremely expensive and time consuming endeavor that is not always successful. This underscores the importance of prevention in Alaska. Felt-soled wading products are being phased out state-wide in to help prevent the spread of aquatic invasive species. Actions such as Fire SOP, -1e, would reduce the spread of invasive species resulting from wildland fire suppression. The initial introduction of aquatic invasive species into the planning area would have adverse impacts at the local level; however as time progressed long-term, major adverse impacts would be expected as invasives spread across the planning area.

Effects from Soil, Water, and Vegetation Management

Fisheries and aquatic habitat would benefit from the proper management of soils, water, and vegetation. The implementation of numerous SOPs and Stipulations designed to protect soil, water, and vegetation on a project-specific basis would reduce disturbance to fish habitats and would aid in the recovery of aquatic habitat from permitted uses. Land use activities that degrade soil, water, and vegetation resources would be expected to reduce the quality and quantity of aquatic habitats and fisheries.

Effects from Lands Managed for Wilderness Characteristics

Lands that are maintained or managed for wilderness characteristics would be potentially beneficial to the fish and aquatic resources found there. Management restrictions (e.g., conditions of use or mitigation measures) which avoid or minimize impacts to wilderness characteristics would also be expected to benefit fish and aquatic resources by minimizing surface-disturbing activities and decreasing the recovery time from disturbance.

Effects from Wildland Fire Ecology and Management

Wildland fire effects which directly impact fish populations include increased siltation, altered water quality (dissolved oxygen, pH, suspended and dissolved solids, total hardness, turbidity), and water temperature changes. Indirectly, any alteration of the nutrient flow that adversely affects aquatic organisms or results in a reduction in emergent insect production would also affect fish populations, at least temporarily. Thawing of permafrost can lead to altered hydrology, which in turn influences hydraulics, morphology, physiochemical, and biological stream function.

Stream siltation is usually negligible from surface erosion on burned sites in Interior Alaska due to its gentle topographical features. Siltation may be a factor where severe burns occur on steep slopes or even shallow slopes with ice-rich active layers, where wildland fire has severely damaged riparian protection of a bank's soil integrity or where heavy equipment is used in suppression activities. Lakes are also potentially vulnerable to wildland fire effects of nutrient concentrations, sedimentation, and erosion of riparian protected shorelines from wave and wind action.

Data on how wildland fire affects stream temperatures and productivity are currently inadequate to accurately assess the effects of wildland fire on anadromous or resident fish habitats. Much of the published work has focused on changes in lake systems (McEachern et al. 2000, St-Onge and Magnan 2000). Analyses of long-term fire effects on stream ecology are currently under way as part of Frostfire, a landscape-scale prescribed research burn in the boreal forest of Interior Alaska conducted in July 1999.

Fish populations have generally shown a positive response during the initial five-year period after wildland fire, where populations can migrate to and from critical habitat throughout the watershed (Gresswell 1999; Minshall et al. 1989).

Fish will generally re-invade burned areas rapidly where movement is not limited by barriers. These new colots generally come from areas upstream of the affected area, from surrounding watersheds and from main stem rivers where migration is not limited. Fish population recovery generally tracks the increase in primary and secondary production that occurs in the early post fire period. Where sediment is continually delivered into the stream, there could be short-term negative effects on the fish and macro-invertebrate communities.

Fuels projects are designed and implemented in a “non-emergency” manner that minimizes impacts to aquatic resources. Wildland fires may still occur in areas where hazardous fuel loads have been reduced, however these fires are typically less intense than crown fires. Severe fires can effectively “bake” the soil, reducing available nutrients to plants during the revegetation process and decreasing the soils ability to absorb water, which results in increased runoff and erosion. Low intensity surface fires are easier to control with lower-impact suppression methods (such as hand-built fire line) that are less likely to adversely affect aquatic resources. In contrast, the severe fires associated with heavier fuel loads often require suppression techniques likely to have greater adverse impacts to aquatic habitats and species.

Careful planning and implementation will minimize the adverse effects of fuels treatments. Some projects involve multiple treatments of the same area. Prescribed fires conducted in the spring (when drainage-bottoms are still snow covered) help to protect riparian vegetation and soils. The primary goal of these projects is to reduce the occurrence, risk, and impacts of wildland fires, not to restore the natural capacity of aquatic species to withstand the effects of natural fires. Removal of vegetation to reduce future fuel loading may be accomplished with minimal impacts in some areas, but in others, sensitivity to ground disturbance from loss of vegetation can cause increased erosion, compacted soils, and a loss of nutrients (USDA and DOI 2000, Beschta et al. 1995).

Impacts to fisheries from wildland fire and fuels management would be the same under all alternatives. Most of the planning area is in a Limited fire management option designation, which means that the standard response is to monitor wildland fires and only initiate suppression actions if necessary to protect identified values. If wildland fire suppression actions occur, effects to fish and fish habitat could occur from increased erosion and ground-based control (fire breaks), and alterations of water chemistry from aerial applications of fire retardant. Impacts from erosion would vary and could be minimized by rapid rehabilitation after the fire is under control, although improperly located bulldozer line firebreaks could greatly increase local stream sediment loads. The by-products of certain retardants exposed to direct sunlight that were used in the past have resulted in fish kills. To decrease the potential of affecting fish habitats and stream conditions, it is a standard operating procedure of the suppression agencies to avoid dropping retardant near or in waterbodies (SOP FM4).

Effects from Forest and Woodland Products Management

Forest harvest activity within the planning area generally consists of small-scale timber removal for personal use. The removal of trees within the riparian zone would reduce the natural source of large woody debris, reducing habitat complexity for fish. Removing trees within the riparian zone could also result in increased water temperatures and streambank erosion, both of which adversely affect fish and the aquatic habitat. Maintaining appropriately sized buffers (no tree cutting) along streams and riparian areas would greatly reduce impacts to fisheries and aquatic habitats.

The construction of temporary roads providing access to timber sales could increase the sediment supply to nearby streams and lakes. Migration barriers to fish may be created if road culverts are not properly designed, installed, and maintained. However, SOP FA-1 would minimize this effect. If access restrictions and forest SOP 1B (stream buffers) are applied, there would be no significant impacts to fisheries and aquatic habitat.

Effects from Minerals Management

Mining of placer gold deposits is projected to be the primary type of mineral development over the life of the plan. The following sections describe the specific effects of placer mining on fish and factors that influence the condition and quality of aquatic habitats, including channel stability and riparian vegetation.

Suction Dredging

Suction dredging, a type of placer mining, can have both beneficial and adverse effects on fish and aquatic habitat depending on the timing and location of the activity. It's assumed that suction dredging operations would occur under Notice level operations which requires a description of how reclamation will be performed to meet specific performance standards found in BLM's Surface Mining regulations, specifically, the rehabilitation of fish habitat (43 CFR 3809.420 (b)(3)(ii)(E)).

Suction dredging has been shown to locally reduce benthic (bottom dwelling) invertebrates (Thomas 1985; Harvey 1986), cause mortality to early life stages of fish due to entrainment by the dredging equipment (Griffith and Andrews 1981), destabilize spawning and incubation habitat, remove large roughness elements such as boulders and woody debris that are important for forming pool habitat and that can govern the location and deposition of spawning gravels (Harvey and Lisle 1998), increase suspended sediment, decrease the feeding efficiency of sight-feeding fish (Barrett et al. 1992), and reduce living space by depositing fine sediment (Harvey 1986).

Conversely, suction dredging may temporarily improve fish habitat by creating deep pools or by creating more living space by stacking large non-embedded substrate (Harvey and Lisle 1998). In dredged areas, invertebrates and periphyton are known to recolonize relatively rapidly, as long as the disturbance area is sufficiently limited to maintain populations of recolonizing organisms (Griffith and Andrews 1981; Thomas 1985; Harvey 1986). In addition, dredge tailings may increase spawning sites in streams lacking spawning gravel or streams that are armored by substrate too large to be moved by fish (Kondolf et al. 1991). In some cases, the reduction in the feeding efficiency of fish may be offset by reduced visibility and the corresponding reduced risk of predation at moderate levels of suspended sediment (Gregory 1993). It's been suggested that fish feed in the plume of turbid water immediately downstream of suction dredging operations presumably on aquatic insects that have been dislodged from the substrate. If so, that would be a temporary beneficial impact of this activity.

Conventional Mechanized Mining

Conventional mechanized placer mining involves the use of heavy equipment to access gold deposits. One method of mine development is to move the stream into a bypass channel, while the original stream channel is excavated for gold deposits. During this process the streambed, streambanks, and riparian vegetation are removed in order to access gold-bearing fluvial deposits which may extend to the bedrock. This method destroys the existing fish and aquatic habitat and eliminates all biological stream functions. During the reclamation phase of the operation,

the stream is either left in its bypass channel or returned to a newly built channel while the overburden and tailings are contoured to the surrounding topography. Reclamation of the mined area requires the rehabilitation of fisheries habitat as found in BLM's Surface Mining regulations (43 CFR 3809.420 (b)(3)(ii)(E)). Other common methods of mine development occur adjacent to, but outside of the stream channel. Impacts to fish and aquatic habitat can be severe and last for decades under the stream-altering bypass method, where mining outside of the stream channel with the use of an adequately sized stream buffer generally results in minimal impacts.

Stream bypasses and newly established stream channels are often built using generalized criteria with the intent of mimicking the natural pattern and profile of the pre-disturbed stream channel. Following reclamation, stream channels are left to adjust at the pace of natural fluvial processes Figure 4.1, "Stream Following Post-Mining Reclamation and Undergoing Natural Adjustments". During this adjustment period, the stream takes on a form dictated by the amount of runoff and sediment derived from the upstream catchment area. Over a period of time, inflow of sediment to the stream will equal the outflow and a state of equilibrium will be achieved. Once this balance is achieved, the stream is considered to be in a stable form (Leopold et al. 1992); however, this process can take decades or more to achieve after reclamation activities are concluded (Tidwell et al. 2000). An important factor in a stream's ability to achieve a stable state is the recovery of adjacent riparian vegetation (Yang 1996, Karle and Densmore 2001). A healthy and functioning riparian community (Figure 4.2, "Stream Demonstrating Stable Channel and Proper Functioning Condition") stabilizes streambanks and unconsolidated material within the floodplain, reducing the amount of sediment that enters the stream and that must be transported in order to achieve a stable state. In watersheds lacking channel stability and riparian function, sedimentation becomes a factor in the suitability of the habitat for fish.



This stream is undergoing natural adjustments to its form following post-mining reclamation (Fortymile Subunit, Uhler Creek, 2009)

Figure 4.1. Stream Following Post-Mining Reclamation and Undergoing Natural Adjustments



This stream demonstrates a stable channel and riparian community in proper functioning condition (Fortymile Subunit, Uhler Creek, 2009)

Figure 4.2. Stream Demonstrating Stable Channel and Proper Functioning Condition

Influence of Excess Sediment

In their natural environment, the survival of fish and other aquatic species depends upon many factors, including; availability of food, predator avoidance, immune system health, and reproduction. Although sediment is a natural part of the aquatic ecosystem, an increase in fine sediment as a result of ground disturbing activities and stream channel instability has the potential to adversely affect all of these factors. It can also create stressful conditions that could increase aquatic species' susceptibility to disease.

Sediment in streams deposited in spawning gravels can smother fish eggs and reduce the amount of intergravel space available for eggs, juvenile fish, and other organisms. This is especially critical in the winter months, when intergravel space is used as refugia and allows fish and other aquatic species to survive under severe flow and temperature conditions. At other times of the year these interstitial spaces act as a conduit providing developing fish eggs and larvae with cold, oxygen-rich water and larger juvenile fish with cover from predators and high velocity stream flows.

The filling of pools with sediment further limits overwintering and summer feeding sites for juvenile and adult fish (Meehan 1991). Aquatic habitat surveys conducted by the BLM on post-reclamation streams have found that streams often lack the diversity of habitats (pools, riffles, glides) and cover components (undercut bank, overhanging riparian vegetation, large woody debris) that are necessary for aquatic biodiversity and population recovery. Not surprisingly, the lack of habitat diversity has resulted in a reduction of fish densities within post-reclamation stream segments by twenty-six to eighty percent (Kretsinger and Lundeen 1995, Kretsinger 2006).

Direct effects of increased sediment loads on aquatic invertebrates include the loss of habitat due to scouring of streambeds, displacement of individuals, smothering of benthic communities, loss of interstitial spaces between substrate particles, abrasion of respiratory surfaces, and interference

of food uptake for filter feeders (Beschta et al. 1995, Milner and Piorkowski 2004). Many of the macroinvertebrates that are favored as food by fish (e.g., mayflies, caddisflies and stoneflies) prefer coarse streambed substrates and are impacted by an increase of fine sediments.

Sediment pollution in the form of turbidity is one of the more common forms of pollution in Alaskan waters (Lloyd et al. 1987). It is known to affect freshwater fish in a variety of ways, including: decreased food availability (reduced primary and secondary production), reduced growth and survival, altered migration timing of salmon smolt, reduced feeding efficiency in sight-feeding species, stress, and avoidance (effects summarized in Lloyd et al. 1987). Many streams within the Interior of Alaska where conventional mining methods have been used experience short duration but chronically occurring episodes of elevated turbidity as a result of destabilized stream channels and sheet erosion. Turbidity commonly exceeds the state standard during periods of high flow and as a result of water control issues during active mining operations. Recent inspections of some mine sites noted turbidity levels that were 60 to 300 times greater than that of the state standard due to water control issues (BLM 2009b and 2009c). Elevated turbidity, as a result of placer mining, in the upper Birch Creek watershed led to its listing as an impaired water in 1992 (ADEC 2008). BLM continues to monitor turbidity in upper Birch Creek, and although water quality has generally improved, recent monitoring (2011) revealed turbidity levels exceeding ADEC standards due to upstream placer mining operations.

Riparian Vegetation

Riparian vegetation is directly related to the health and productivity of the aquatic environment. The removal of riparian vegetation results in the loss of a variety of functions normally provided by a healthy functioning riparian community. Many of these functions are related to the stability of the stream channel, but some of the functions are directly related to the maintenance of high quality habitat, as described in Chapter 2. Post-reclamation stream characteristics, which lack the stabilizing influence and other functions normally provided by a healthy and functional riparian community, are typically not suitable to species or life stages of fish and other aquatic organisms that occurred prior to disturbance. Some of the conditions normally encountered following reclamation are disconnected floodplains (further limiting the moisture available to plants); tall, vertical, and unstable streambanks as a result of stream channel incision (streambanks continue to erode and prevent vegetation from establishing); aggravated icing conditions (aufeis) due to the removal of riparian vegetation (which exposes the stream to wind scour and loss of the insulating properties of snow); and the altered stream channel geometry and surface - groundwater interaction. The loss or reduced quality of the habitat is expressed through changes in cover, energy (food) availability, and living space.

Passive reclamation techniques, which are the most commonly employed, rely on time and natural processes for recovery. This technique results in the prolonged recovery (decades) of riparian vegetation and riparian proper functioning condition. Since riparian vegetation is a mid-level function and biological communities (fish) are a top-level function within the stream function pyramid, fish communities experience similar recovery times (decades) under passive reclamation. Accelerated runoff from denuded areas and streams left in altered configurations can trigger headcutting of the streambed, which lowers the streambed and water table, disconnects and dries out the riparian vegetation, destabilizes streambanks, increases erosion, and further accelerates runoff and changes to channel pattern and profile. Unless stopped by some form of intervention or a hard geologic formation, headcutting may migrate upstream and further disrupt the hydrologic function of the stream system (Rosgen 1996).

Accelerated runoff may also result in water velocities that cause involuntary downstream displacement and mortality of juveniles, result in scour-related mortality of eggs and alevins, accelerate streambank erosion, and over the long-term, deplete large woody debris and organic material. The enlargement of stream channels may result in a shallow, braided channel, slow water environment during periods of low flow. This new environment can result in reduced pool size and crowding of fish, loss of spawning habitat, reduced primary and secondary productivity, increased vulnerability to predation, elevated water temperatures, and increased sedimentation (Swanston 1991; Hicks et al. 1991; National Research Council 1992; Strouder et al. 1997).

Rates of revegetation on sites disturbed by placer mining are quite variable and are influenced not only by the natural conditions that define the subarctic environment but the post-reclamation conditions as well. The subarctic environment is characterized by having a short growing season, low temperature, nutrient poor soils, and relatively low precipitation (Chapin et al. 2006), which all act to limit plant growth. These limiting conditions, coupled with post-reclamation conditions, can prolong riparian recovery. Additionally, aufeis, essentially the formation of a glacier within the active floodplain, can develop and persist into July in areas where stream channels have been altered (Figure 4.3, "Aufeis on a Post-Reclamation Stream Channel"). During the period of ice cover soil temperatures are maintained near freezing, effectively reducing the growing season by several weeks or longer.

Under more suitable conditions vegetation can recolonize vigorously within 10 to 15 years following reclamation, but may remain in non-functioning condition for decades if disconnected from the floodplain and subject to vertical, unstable banks (Figure 4.4, "Post-Reclamation Riparian Community Demonstrating Non-Functional Condition"; BLM unpublished mine site observations). Under less optimal conditions little or no vegetative cover has been established 50 or more years after the last episode of mining (Arnett 2005; Milner and Piorkowski 2004, Weber and Post 1985). In the absence of human intervention, the time required for riparian areas to attain proper functioning condition after major disturbances is dictated by natural processes and is commonly measured in decades rather than years (Tidwell et al. 2000, Arnett 2005, Viereck et al. 1993; Milner and Piorkowski 2004, BLM 1988a,b,c).

Most of the impacts associated with conventional methods of mining would be alleviated with the use of riparian buffers. Riparian buffers mitigate the potential loss or reduction of riparian resources and the associated fish and aquatic habitat by providing an area of undisturbed land between the natural channel and the mining operation. Fish and aquatic species benefit when stream buffers are used because desired aquatic habitat conditions (Chapter 2) are maintained. The use of buffers has been widely recognized as an effective way to maintain the riparian community in proper functioning condition, provide for a stable stream channel and retain the productive capacity of the natural stream environment (Figure 4.5, "Proper Functioning Riparian Community" (USDA and DOI 2000, Fischer et al. 2000). In 1989, the BLM recommended the use of buffers as a practical means for minimizing disturbance in their handbook "Placer Mining in Alaska, A Guide to Mitigation and Reclamation." In 2000, stream buffers were incorporated into an approved plan of operation (BLM 2000) and most recently, the BLM adopted the use of stream buffers in the Kobuk-Seward Peninsula Management Plan (BLM 2008d).

In summary, placer mining can negatively effect fish and aquatic resources by degrading or eliminating aquatic habitat; reducing available food sources and water quality; reducing available pool habitat; eliminating riparian vegetation and function; creating sparsely vegetated valleys and floodplains with slow rates of natural revegetation and unstable stream channels with highly

erodible beds and banks; altering the longitudinal slope, geometry, and sediment transport rates in streams; and creating undersized or absent floodplains.



This post-reclamation stream has aufeis in mid-June (Steese subunit, 2009)

Figure 4.3. Aufeis on a Post-Reclamation Stream Channel



This post-reclamation riparian community demonstrates vigorous growth 10 to 15 years following reclamation, but remains in non-functioning condition due to the disconnected floodplain and vertical, unstable banks (Steese subunit, 2009).

Figure 4.4. Post-Reclamation Riparian Community Demonstrating Non-Functional Condition

The Effect of Proposed Management Actions in RCAs and ACECs

Over the range of action alternatives, from zero to fourteen percent of the stream miles opened to locatable minerals would fall within watersheds containing ACECs (that meet the relevance and important criteria for fish and aquatic resources) or RCAs. The requirements listed in management of watersheds (Chapter 2, Fish and Aquatic Species) apply in RCAs and ACECs. In addition to these requirements and to meet the management goals in RCAs (Chapter 2, Fish and Aquatic Species Watersheds), the collection of stream-specific baseline hydrological data, active revegetation, and streambank stabilization techniques would be required for actions proposing to alter stream channels (e.g., placer mining). These additional requirements within RCAs and ACECs would improve the chance of obtaining desired future conditions for aquatic habitats within the specified timeframe (less than five years).

A range of success would be expected based on several factors. These factors include the technique used for baseline data collection and the method of stream channel design, the reclamation measures specified for a particular operation, the characteristics of a particular watershed, the quality and quantity of growth medium available for vegetation, and the probability of experiencing a flood that exceeds the capability of the stream channel prior to the establishment of riparian vegetation capable of resisting flood flows. The timeframes listed below for the recovery of desired habitat conditions are a “best guess” situation. That’s because we are unaware of any examples where a management prescription like the one required under this scenario was implemented on a placer mined stream in Interior Alaska.

Assuming that baseline data is collected and reclamation is designed using the best available techniques such as those outlined in the Natural Resources Conservation Service’s (NRCS, 2007a) *Stream Restoration Design, National Engineering Handbook, Part 654* and all of the factors previously mentioned are favorable, instream habitats may achieve desired future conditions within a short (5 years) time frame. If so, impacts would be considered minor and short-term. However, stream channel design/reconstruction and aquatic habitat rehabilitation is very complex and even more so within the planning area due to the harsh environmental conditions (short growing season, aufeis, etc). Recognizing this complexity, a more realistic outcome may be a strong positive trend toward the desired habitat conditions within five to ten years under this management scenario. It would be essential that reclamation plans incorporate stream channel design based on channel forming discharge (typically 1.5 year recurrence interval) and the floodplain be capable of transporting 100-year flood flows. This would minimize the chance of reclamation failure and partially fulfill the requirements of executive orders 11988 (floodplain management) and 11990 (wetland protection) to restore floodplain and wetland function.



This stream has a proper functioning riparian community providing a diverse composition of aquatic habitat features. (Upper Black River Subunit, 2009)

Figure 4.5. Proper Functioning Riparian Community

Effect of Proposed Management Actions Outside of RCAs

Over the range of action alternatives, from eighty-seven to one-hundred percent of the stream miles open to locatable minerals would not be within RCAs or ACECs (that meet the relevance and important criteria for fish and aquatic resources). The requirements for stream channel design and reconstruction are less stringent in areas outside of RCAs and ACECs (Chapter 2 - Fish and Aquatic Species Watersheds). For example, if stream specific baseline data is not available or easily obtained, more generalized data may be used for designing the reconstructed channel. Also, either the use of active revegetation or anchored rocks/logs to stabilize streambanks, prevent erosion, etc., may be required, but not necessarily both.

A range of success would be expected based on several factors. These factors include the thoroughness of the techniques used for baseline data collection and stream channel design, reclamation measures specified for a particular operation, the characteristics of a particular watershed, the success of restoring stream and riparian functions, and the probability of experiencing a flood that exceeds the design capability. The timeframes listed below for the recovery of desired habitat conditions are a “best guess” situation. That’s because we are unaware of any examples where a management prescription like the one required under this scenario was implemented on a placer mined stream in Interior Alaska.

On one end of the spectrum, if the basic steps in alluvial channel design are strictly adhered to (Chapter 2, Fish and Aquatic Species Watersheds and NRCS, 2007a), the morphological characteristics used to design the channel closely resembled those of the pre-disturbed channel, and all of the previously mentioned factors are favorable, a strong trend toward or possibly achieving desired habitat conditions may occur in 10 years. If so, impacts to fish and aquatic resources would be moderate and considered longer than short term, but not long term. Again, realizing the complexity of stream channel design/reconstruction and aquatic habitat

rehabilitation, a more realistic outcome from this level of reclamation would be a positive trend toward the desired habitat conditions in no less than 10 years and may take 20 years or longer. Impacts to fish and aquatic resources under that scenario would be considered moderate to high and long term. This outcome assumes that reclamation plans provide for the proper design and construction of the stream channel and floodplain to ensure floodplain connectivity is maintained.

If reclamation measures similar to those used in the past are employed (see measures previously described under Conventional Mechanized Mining) in conjunction with the application of common bio-engineering techniques (e.g., willow plugs) it is anticipated that unstable channel conditions would persist beyond 20 years dependant on the energy gradient of the system. The outcome of reclamation efforts would likely reflect that of natural succession (Vioreck et al. 1993, Chapin et al. 2006) with an overall progression toward later successional stages interspersed by setbacks to earlier stages. The gradual progression over time would lead to the development of desired fish and aquatic habitat conditions but this is not likely to occur within the life of this plan.

Currently there are 33 mines working under an approved Plan of Operations within the planning area. These operations would not fall under the management requirements discussed above unless their current authorization expired or until a substantive modification of an existing Plan of Operations was proposed. Impacts to fish and aquatic habitat by placer mines operating under an existing authorization are projected to be similar to impacts commonly observed from past placer operations as discussed previously.

Effects to Aquatic Special Status Species

Four BLM Sensitive aquatic species are known to occur within or adjacent to the planning area. Effects to these species from mineral development/management would be similar those described above for fish and aquatic resources. Specific effects cannot be estimated due to limited information on the distribution of these species.

The Alaskan Brook Lamprey *Lampetra alaskensis* has been found in the Chatanika and Chena rivers, within the Steese Subunit, but are not yet known to occur on BLM-managed lands. Spawning activity and early life stages (the first four years of life) of the Alaskan Brook Lamprey may be especially vulnerable to disturbance from suction dredging and placer mining.

The Alaska Sallfly *Alaskaperla ovibovis* is a rare species of stonefly known to occur in the West Fork Dennison Fork of Fortymile River, within the Fortymile Subunit.

The Alaskan endemic mayfly *Rithrogena ingali* is known from only a single specimen collected on Birch Creek, within the Steese Subunit. Since it is only identified using characteristics of adults (which are not often collected) it likely occurs more widely.

The mayfly *Acentrella feropagu* has been found very near the northern boundary of the planning area, but has not been documented within the planning area.

Effects from Salable Minerals

Demand for gravel, rip-rap and other salable minerals is expected to increase slightly during the life of the plan. Currently, there are 11 active or pending material sites, totaling approximately 160 acres of authorized disturbance within the planning area. It is assumed that no more than 200 acres of authorized disturbance on BLM-managed lands would be required to meet material demands over the next 20 years, with the acreage split fairly equally between the Fortymile and White Mountains Subunits (Chapter 4, Assumptions for Analysis). There are no known

adverse effects from salable minerals on fisheries and aquatic habitat within the planning area at the current time and none are anticipated.

Effects from Recreation and Travel Management

Recreation use within the planning area is expected to increase over the life of the plan, and the impacts to fisheries and aquatic habitat from recreation may also increase. Impacts to fish and aquatic habitat generally increase with increasing levels of OHV use especially in areas open to off-trail use. Without adequate enforcement, off-trail use may continue and will likely increase given the general increase in OHV use, even in areas that are restricted to designated trails. user-created trail proliferation, with no guidance for proper construction and placement of new trails, can result in increased erosion and sediment impacts.

Potential impacts to fisheries and aquatic habitats from OHV use would result from disturbance to riparian habitats and streambanks. The loss of riparian vegetation and subsequent bank erosion lead to increased stream sedimentation resulting in diminished water quality. Increased sedimentation in streams could affect fisheries in a variety of ways, including direct mortality, reduction in suitable spawning gravels, reduction in summer and winter rearing habitat, suffocation and mortality of eggs, and displacement of individual fish.

Where trails cross streams, soil and vegetation may be altered or destroyed resulting in unstable and eroding streambanks. The impacts to fisheries and aquatic habitat can be minimized if vehicle stream crossings are made at stable sections of the stream (rocky or gravel soils) and crossed as close as possible to a 90 degree angle in shallow riffle areas (SOP Water 5c). Crossing of anadromous streams or rivers with a vehicle requires a fish habitat (Title 16) permit from the ADF&G online at <http://www.habitat.adfg.alaska.gov/fhpermits.php>. Temporary campsites or development of trails can also lead to the trampling of streambanks and the associated loss of vegetation and streambank erosion. In addition, trails should not be routed or constructed so as to collect and carry overland runoff and sediment to streams.

Aside from placer mining, road maintenance and development poses the second greatest threat to fish and aquatic habitat. Disturbance of soil and rock during road construction creates a significant potential for erosion and sedimentation of nearby streams. Roads greatly increase the frequency of landslides, debris flow, and other mass movement. Culverts, if not designed and maintained properly, often create migration barriers to fish resulting in a loss of habitat. Road construction is a major ground disturbing activity with potential long-term impacts to fish and aquatic resources.

With an increase in recreational use, typical pollutants such as soaps, human waste, and fuels also increase. These pollutants can be introduced into the aquatic environment from accidental spills or when used in close proximity to streams and lakes.

4.3.1.4.2. Cumulative Effects

Cumulative Effects from Climate Change

The Eastern Interior of Alaska is projected to become warmer and drier over the next century. Field data collected in several streams by the BLM within the planning area suggests that water temperatures exceed the State of Alaska water quality threshold for freshwater fish (18 AAC 70.015) (BLM unpublished data, 2009) due to residual impacts from placer mining. Within stream systems exhibiting altered geomorphology and reduced riparian cover, water temperatures may limit fish distribution. Increased water temperature from climate change could further limit fish distribution seasonally, especially within altered stream systems.

Cumulative effects from Locatable Mineral Entry

The BLM is responsible for managing twenty-one percent of the land (6.5 million acres) within the planning area. Within BLM-managed portions are approximately 11,000 miles of streams, 400 miles of which are anadromous representing twenty-one percent and fourteen percent of the total stream and anadromous miles within the planning area, respectively. Consequently, the impacts from activities managed under the action alternatives could play a distinctive role in the cumulative effects occurring within the analysis area. Given the protective measures incorporated into the action alternatives, activities that occur on non-BLM lands, such as placer mining on state-managed lands, have more potential to impact fish and aquatic resources at the planning area scale than lands administered by the BLM.

Stream altering activities in some watersheds within the planning area, such as the Birch Creek watershed, have reduced the available fish habitat and have caused a downward trend in local fish populations (BLM 1988a). This is due at least partly to the adverse cumulative effects that have occurred from past activities. Ongoing activities or adverse conditions that remain in such watersheds may remain for the life of this plan (20 years) due to the decadal time scale of recovery (Tidwell et al. 2000). The intent of the reclamation standards and procedures laid out in the fisheries section is to reduce and or shorten the adverse impacts to fish and aquatic habitat from the effects of placer mining and to reverse this downward trend.

Locatable mineral development has occurred within the planning area and will continue into the future. Stream altering activities will continue to be a potential threat to fish and aquatic resources within the planning area. Fish and aquatic habitat open to locatable minerals are at risk of being lost or degraded during both the short- and long-term. The proposed requirements for stream channel reconstruction combined with other improved reclamation techniques are an attempt to minimize impacts and result in a strong positive trend toward desired habitat conditions within 5 to 10 years in RCAs and ACECs and within 10 to 20 years in all other watersheds, while still allowing for mining. When riparian zones remain in properly functioning condition the fish and aquatic habitat will likely remain in natural and desired conditions. If placer mining continues to occur and in conjunction with current reclamation practices, then fish and aquatic resources will likely continue a downward trend (Arnette 2005, Tidwell et al. 2000, BLM 1988b).

Two large-scale lode mines may be developed within the planning area on state or private land within the life of this plan. One lode mine is known as “Money Knob” and is located near the town of Livengood which is on the western edge of the White Mountains Subunit. It is assumed that ore at “Money Knob” will be extracted using a heap leach facility with the use of sodium-cyanide. This method of mining can have long-term environmental consequences. Water

from precipitation or surface flow can become contaminated when it comes in contact with mining wastes, including waste rock and tailings. Effluent water that contains mineral processing chemicals such as cyanide may also leak from leach pads, well seals and pipes. The result of contaminated effluent water leaking into nearby waterbodies at mine sites in Colorado, South Dakota, Idaho, and New Mexico varies from reductions in viable fish populations to streams that no longer support aquatic life (Roth 2006). The other lode mine is located 35 miles northwest of the town of Chicken in the Fortymile Subunit. It is anticipated that this mine will use flotation techniques in indoor storage bins for ore processing.

Currently, there are approximately 742 valid federal mining claims containing approximately 190 miles of stream which have been mined or have the potential to be mined within the planning area. In addition to the federal mining claims, there are approximately 15,000 state mining claims within the planning area. The number of acres and stream miles affected by state mining claims is not currently available. Impacts on state claims would be additive to the effects from federal claims.

The action alternatives recommend opening 1,400 to 7,900 additional miles of stream to locatable mineral entry. This represents an eighty-eight to ninety-eight percent increase above the number of stream miles within current valid federal claims managed by the BLM (Table 4.7, "Stream Miles and Acres Open to Locatable Mineral Entry, All Subunits"). This is not to say mining is likely to occur on all of those stream miles, but those stream miles would be open to locatable mineral entry (see Locatable Minerals assumptions). Given the substantial increase in acres and stream miles open to locatable mineral entry in this RMP, combined with the recent and significant increase in gold prices, the potential cumulative adverse impacts from placer mining on state and federal claims during the life of this plan could be significant and result in: 1) short- and long-term effects, 2) local and regional reductions in fish and aquatic species, 3) potential reduction in species diversity, and 4) a continued downward trend of both quality and quantity of fish and aquatic resources within the planning area. Improved reclamation techniques, the application of SOPs and BMPs, and the maintenance of riparian vegetation and function would reduce impacts to fish and aquatic resources, but is not likely to reverse the downward trend.

There exists a wide range of potential disturbance to fish and aquatic resources from locatable mineral entry, as shown in Table 4.7 below. In Alternative E (Proposed RMP), all RCAs would be closed to locatables and therefore the highest valued fisheries and riparian resources would likely remain intact during the life of this plan. The more stringent reclamation requirements for RCAs would only apply to valid existing claims that fell within the proposed RCAs. Of the 570 stream miles within RCAs open to locatables in Alternative C, 560 (ninety-eight percent) occur in the Upper Black River subunit. In Alternative E, approximately 26 percent of the total stream miles managed by BLM within the planning area would be open to locatables. Those stream miles (2,876) would be subject to the less stringent requirements for reclamation, as compared to reclamation requirements in RCAs and ACECs. It may take twice as long (twenty years) to achieve desired habitat conditions in non-RCA streams. If the reclamation requirements for RCAs and ACECs were applied to all streams, desired habitat conditions may be achieved in 10 rather than 20 years after mining disturbance. Under Alternative E there would be approximately 1,500 miles of stream open to locatable mineral entry within moderate to high mineral potential areas. Potential adverse impacts to fish and aquatic resources would be the least in Alternative A, progressively increase from Alternative B, E, and C, and be the greatest in Alternative D.

Table 4.7. Stream Miles and Acres Open to Locatable Mineral Entry, All Subunits

ALL FOUR SUBUNITS (BLM-managed Lands)	Alternatives				
	A	B	C	D	E
Stream miles	11,000	11,000	11,000	11,000	11,000
Stream miles open to locatables (proposed)	0	1,400	6,500	7,900	2,876
Stream miles open to locatables (proposed) plus miles within current valid federal claims	190	1,600	6,700	8,000	3,066
Stream miles within RCAs in areas open to locatables (proposed)	N/A	20	570	420	0
Stream miles outside RCAs in areas open to locatables (proposed)	181	1,400	6,000	7,500	2,986
Acres open to locatables (proposed)	0	834,000	3.9 million	4.8 million	1.7 million
Acres open to locatables (proposed) plus acres within current valid federal claims	21,000	855,000	3.9 million	4.8 million	1.7 million
Anticipated stream gravel disturbance by suction dredging during life of plan measured in cubic yards	280,000	440,000	920,000	1.2 million	440,000
Potential impacts to fish and aquatic habitat (1–5, 5 = greatest)	1	2	4	5	3

Cumulative effects from Travel Management

Demand for both legal and physical access from all users will increase during the life of the plan. Demand for roads and transportation rights-of-way on BLM-managed lands will increase slightly during the life of the plan. Road development is contingent upon the economic viability of resource development, primarily minerals, and the needs of the State to plan and carry out transportation access in Interior Alaska. The action alternatives in this RMP recommend lifting the current locatable mineral withdrawals on approximately one to five million acres, which could increase the need for road development for access to new mining claims. OHV use within the planning area is also increasing and the impacts to fisheries and aquatic habitat from OHV trails or cross-country use may also increase. Cumulative impacts from travel management within the planning area have the potential for long-term effects on fish and aquatic resources. The intensity of those impacts vary depending on the location of roads and trails in relation to streams and waterbodies as well as slope, aspect, soil type, and the method in which they are constructed. With the proper use of mitigating measures, SOPs, and best management practices, impacts could be greatly reduced.

Cumulative effects from Activities Outside of the Planning area

Fish populations are not restricted by land ownership or planning area boundaries. Many resident species migrate upstream and downstream annually and throughout their life cycles using aquatic habitat independent of land ownership. Anadromous fish migrate to the ocean as smolts (juveniles) and return years later as adults. Anadromous fish within the planning area migrate well over one thousand miles by the time they return as spawning adults crossing numerous managerial boundaries and varying environmental conditions. Fluctuating ocean conditions, harvest pressure, predation, and disease occurring outside of the planning area are significant factors effecting anadromous fish populations.

Other effects of activities in the planning area could include loss of fish habitat or reduction in habitat quality associated with oil and gas related development, invasive species, recreation, forest management, and realty actions.

4.3.1.5. Non-Native Invasive Species

Summary of Effects

Non-native invasive species (invasive species), which includes plants, animals and pathogens, have resulted in costly environmental and economic impacts throughout North America. Impacts to vegetative communities and fish and wildlife species outside of Alaska include alteration of habitat and riparian function, changes to fire regimes, and competition for resources. Climate and a minimum of roads and other disturbances, such as agriculture, have delayed the introduction and spread of nonnative invasive plants (invasive plants) in Alaska in the past (Carlson and Shepard 2007). Over the past decade of inventory and monitoring the number and distribution of invasive plants has increased, in some areas of the state by a factor of two or more (AKEPIC 2009 <http://akweeds.uaa.alaska.edu/>). Only some of the increase in species detected is due to increased emphasis on inventory of invasive plants. The emphasis of this analysis is on invasive plants rather than all invasive species.

Any disturbances on the landscape, whether natural, such as wildland fire and flooding events, or human caused, such as right-of-way or trail development, provide an opportunity for invasive plants to become established (Carlson et al. 2008). Pathways for spread often accompany the disturbance. Equipment, watercraft, vehicles and gear used for suppression of wildland fires or land uses, such as mining and recreation, may harbor seeds of invasive plants, which become dislodged at the site of activity.

Invasive animals and pathogens are emerging as a new concern on public lands. Pathways for introduction are often the same for invasive plants, animals and pathogens. Prevention practices, early detection and rapid response, and outreach and education are the best defense against invasive species. Most impacts analyzed in this chapter will be from resources and resource use on invasive plants.

Over the life of the plan, nonnative invasive species are expected to expand at an increasing rate in Alaska, altering plant communities, impacting fish and wildlife habitat, introducing competition for resources and even increasing predation. Climate change predictions, including longer frost-free seasons and thawing of permafrost, indicate that conditions could accelerate and favor the ability of invasive species to become established (Rupp and Springsteen 2009b). Infestations would continue to be concentrated around disturbances and areas of use, such as trails, recreation sites, roads, mines, and other developments but some invasive plants are becoming adapted as understory plants. Timely reclamation using desired native plant materials could be used to diminish the potential for non-native invasive plant species to become established at disturbed sites.

Alternative B would yield the lowest potential for introduction or spread of existing populations of invasive plants. Management under Alternative D would yield the highest potential for introduction or spread of existing populations of invasive plant due to potential for the most ground disturbing activity. Severity of impacts would vary by subunit. Indicators used for impact analysis for invasive plant are the potential for increases or decreases in new non-native plant populations and density and extent of existing populations.

4.3.1.5.1. Effects Common to All Alternatives

Proposed management of the following resources, resource uses and programs would have no negative impacts to invasive species management and will not be analyzed further: Air and Atmospheric Values, Cave and Karst Resources, Cultural and Paleontological Resources, Fish and Aquatic Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, and Wildlife. Decisions to protect resources, particularly fish, wildlife, Special Status Species, Wilderness Characteristics and vegetation would benefit management of invasive species by maintaining intact and undisturbed habitats and through stipulations to mitigate impacts from land use actions and maintain the function of these systems. Special designations (ACEC or WSR) would have positive impacts on invasive species management, furthering prevention of their introduction and spread.

Effects from Wildland Fire Ecology and Management

Invasive species, particularly invasive plants, could be introduced within the planning area as a result of fire suppression activities. Over the life of the RMP, fire management options on BLM-managed lands in the planning area would probably remain in suppression categories that limit on-the-ground response. Limited activity would eliminate much of the use of fire suppression personnel, helipads, vehicles, equipment, and dozer lines, thereby reducing potential for suppression related introductions of invasive plants.

Burned areas provide ideal disturbance for invasive plants to become established. Even with limited suppression activity, invasive plants could spread into burned areas from adjacent infestations or through unintentional introduction from other uses, such as trail and cross-country OHV use.

Mitigation designed to reduce impacts of wildland fire suppression activities that would directly introduce or create favorable conditions for invasive plants would include cleaning of equipment, limitations on the use of dozer lines and off-road vehicles, rehabilitation of lines by replacing duff and soil, and use of weed free native plant materials when stabilizing, seeding, or planting. Timely early detection and rapid response (EDRR) efforts in and adjacent to burn areas would be used to reduce impacts.

Forest and Woodland Products

Invasive species, particularly invasive plants, could be introduced within the planning area as a result of fire suppression activities. Over the life of the RMP, fire management options on BLM-managed lands in the planning area would probably remain in suppression categories that limit on-the-ground response. Limited activity would eliminate much of the use of fire suppression personnel, helipads, vehicles, equipment, and dozer lines, thereby reducing potential for suppression related introductions of invasive plants.

Any disturbances caused by commercial or other authorized harvest of timber and forest products could contribute to the introduction and spread of invasive plants. A NEPA process, usually an environmental assessment (EA), would be conducted for commercial harvest activities. Adverse consequences from invasive plants due to these activities would be analyzed and appropriate stipulations applied to the permit to mitigate impacts. Free-use permits would be issued under a categorical exclusion to which special conditions would be applied. Although the area available for commercial uses varies among the subunits and alternatives, impacts to invasive species would be expected to be minor and successfully mitigated through permit stipulations.

Land and Realty Actions

Realty actions, such as rights-of-way, that result in the disturbance or removal of vegetation create ideal opportunities for invasive plants to become established. Overland access to the disturbance creates a pathway for introduction of invasive plants from infested sites along highways. Equipment used for construction and maintenance could harbor seed or other invasive species that could be dislodged and become established along access routes and at the disturbance. Designating utility and right-of-way corridors and avoidance areas, and locating new rights-of-way near existing rights-of-way, or on already disturbed areas whenever possible, would significantly reduce the potential for introduction and spread of invasive plants across the landscape. Land use authorizations would also be analyzed on a project-specific basis, providing the opportunity to mitigate impacts through permit stipulations.

Introduction and spread of invasive plants could also occur in construction, maintenance, and reclamation projects where gravel, fill, and other materials are moved from a source area to public lands. Stipulations to authorized activities are and would be used to mitigate these methods of spread. A weed-free gravel (WFG) certification program was developed in 2012 in Alaska. BLM would require the use of WFG when practicable for permitted activities using gravel and other fill materials.

Invasive species such as insects, pathogens, and other pests are often introduced as hitchhikers on vehicles, gear, and plant materials used in land use actions. The danger of invasive species becoming established would be compounded if vehicles, equipment, and gear used for these kinds of actions come from outside the region and state. Even though cleaning vehicles and equipment before it is transferred to public lands would reduce the potential for introduction of invasive species, opportunities to stipulate vehicle washing in permitted activities would be limited due to distances from urban areas and the expense of remote washing stations.

Minerals

In general development of minerals would create disturbances, including pads, infrastructure, and roads, that would provide suitable areas for invasive plants to exploit. Oil and gas activities would be expected to be limited to seismic exploration in the Steese or Upper Black River subunits.

Recreation

Any recreational activity has the potential for introducing and spreading nonnative invasive species. Recreational visitors often travel to the planning area from other parts of the state and country. Tents, footwear, packs, canoes, boats, and other gear would harbor seeds and invertebrates that would then be dislodged and become established in new areas.

Invasive plants are commonly introduced through use of contaminated hay and straw products. Travel by dog team and horse occurs in the planning area. Invasive plants were found growing in straw debris at cabins accessed with dog teams in the White Mountains (Musitano unpublished, 2002) and at sites along the Dalton Highway where horses were fed hay (Pers. Comm. Gronquist 2010).

Authorized use of dog teams on BLM-managed lands, such as commercial recreational tours or sponsored sled dog races, would require the use of weed free or local straw. However, most use of dog teams on public land is recreational and would not be administered under a permit. Authorized use of pack animals for guided hunting or other commercial use on BLM-managed

land would require the use of weed-free pellets and hay prior to and during use of BLM public lands. Non-commercial use of pack animals could occur on BLM-managed lands and outreach and education would help reduce impacts.

Boats powered either by inboard or outboard motors, and non-motorized boats can harbor non-native invasive plant and animal species. Boats are often brought onto public lands in Alaska from other regions of Canada and the U.S. by recreational users. The risk of introduction and spread from watercraft would be substantial given the aquatic invasive species prevalent in the contiguous U.S. and Canada.

Outreach and public awareness efforts (brochures, interpretive and educational information, site regulations, the BLM website) would be developed to help prevent unintentional introductions of invasive species. “Tread Lightly” and “Leave No Trace” practices promoted on BLM-managed lands would reduce impacts of recreation on the landscape, which would reduce removal or trampling of vegetation and diminish opportunities for invasive species to become established. Developed sites such as campgrounds, trails and public use cabins would concentrate use and reduce the overall footprint from recreational activity and consolidate the impact to invasive species management in a more confined area. Special recreation uses would be analyzed on a project-specific basis and permits would include stipulations to mitigate impacts to invasive species as appropriate.

Renewable Energy

Only small-scale renewable energy projects, and few of those, would be anticipated in the planning area. Impacts to invasive species would be similar to those for realty actions and would be mitigated by stipulations attached project-specific permits.

Travel Management

Invasive plant infestations often follow transportation routes, including highways and trails. Roadsides and trails are prime habitat for invasive plant species and vehicles, including OHVs, are prime vectors for the introduction and spread of invasive plants along roads and trails. Vehicles import (and export) invasive plant seeds, often introducing previously unrecorded species. Any disturbance or use, including non-motorized, could contribute to introduction and spread of invasive plants in the planning area.

Seeds of non-native plants can be imported or spread into an area if they become attached to OHVs. Tests conducted by Trunkle and Fay (1991) demonstrate that seeds embedded in tires of four-wheel drive vehicles can be carried and deposited long distances from infested site. In their study, eight percent of the original number of seeds was still attached after the vehicle had driven ten miles. Continued heavy use of OHVs in an area and development or pioneering of new trails could reduce vegetation cover and expose soil, providing ideal conditions for invasive plants to become established (Gelbard and Belnap 2003; Christen and Matlack 2006).

Aircraft use in the planning area would be generally unrestricted (with provision as described in travel management sections). The exception would be within Primitive Zones in the Steese and White Mountain Subunits. Aircraft on wheels, skis and floats would contribute to the spread of invasive plants when taking off from strips, ponds and lakes that are infested with invasive plants. Seeds and plant propagates could be harbored on landing gear, struts and other parts of planes and then dropped at landing strips, ponds or lakes (Johnstone et al. 1985).

Motorized boat use would generally be allowed in the action alternatives for all subunits. Aquatic nonnative invasive species embedded in and on motors could be introduced to waterways within the subunits and readily move to areas outside the subunits along currents. The nonnative invasive aquatic plants purple loosestrife, *Elodea nuttallii* and *Elodea canadensis* are known to occur in Alaska and are most likely to be introduced by motorboats. Visitors to the state who bring motorized boats from other parts of the continent could cause introduction of other pests, such as zebra mussel, into BLM-managed areas open to motorized boat use. EDRR, outreach and education would be the tools that best mitigate introduction and spread of invasive species.

4.3.1.5.2. Cumulative Effects

Past, present and reasonably foreseeable actions that are relevant to invasive species management include climate change, wildland fire frequency, severity, use and suppression, fuel treatments, mineral management, population growth, recreation use, OHV use, realty actions, and invasive species management efforts. The impacts expected to occur due to invasive species infestations include loss of plant diversity, fish and wildlife habitat, soil integrity, and reduced ecosystem function. Climate change predictions, including longer frost-free seasons and thawing of permafrost, indicate that conditions may accelerate the ability of invasive species to become established (Rupp and Springsteen 2009b).

Regional approaches to management of invasive species, particularly invasive plants, through statewide efforts of the Alaska Committee for Noxious and Invasive Plants Management, the Alaska Invasive Species Working Group and Cooperative Weed Management Areas have been and will continue to be the most effective means of reducing cumulative impacts on adjacent lands. Many agencies are preparing statewide invasive species management plans. An invasive plants strategic management plan will be prepared as a step down plan from the Eastern Interior RMP.

4.3.1.6. Soil and Water Resources

Summary of Effects

Erosion of soils, compaction, loss of soil structure, loss of permafrost (thermokarst) and subsequent instream sedimentation are the most important concerns for maintaining soil health and water quality in the planning area. A variety of resource uses and programs in this plan have the potential to result in direct adverse impacts to soil and water resources regardless of subunit and alternative. These include Wildland Fire Management, Lands and Realty, Mineral Development, Recreation Management and Travel Management. Other programs and resources that may have common benefits or some impact on soil and water resources are also discussed here.

Water and soils resources, for all subunits and all alternatives, would be managed to reduce soil-erosion, minimize impacts to soil profiles, and comply with State of Alaska water quality requirements. Permitted uses would be analyzed through the NEPA process and measures would be considered to protect and/or restore healthy functioning watersheds and minimize disturbance of soil resources.

4.3.1.6.1. Effects Common to All Alternatives

Effects from Air and Atmospheric Values

As the planning area is sparsely populated with no present or future plans for development of industrial facilities, it is anticipated that no substantial anthropogenic air-quality pollutants would originate from the planning area during the life of the plan. Long-range atmospheric transport of emissions from other countries (Shaw 1995), however, occurs periodically and may impair soil and water resources through deposition of airborne pollution, including mercury (Cahill 2003).

Effects from Cultural and Paleontological Resources

Impacts to soil and water resources from cultural and paleontological management are anticipated to be minor and should be similar across all subunits and all alternatives. Nonetheless, the discovery of cultural or paleontological resources could create temporary soil-disturbing activities and subsequent erosion at selected excavation sites. Excavation sites would likely be limited in extent and number, and thus, should not have major negative impacts on soils or water quality in the planning area. Soil and water resources would receive protection at selected sites where ground-disturbing activities would be restricted to preserve cultural and paleontological resources.

Effects from Fish and Aquatic Species

Measures to restore fish and aquatic species habitat, and to protect healthy watersheds would result in long-term beneficial impacts to soil and water resources. Under all alternatives, fish and aquatic species management decisions would strive to preserve or restore the quality of aquatic ecosystems, resulting in considerable protection for soil and water resources.

Under all alternatives in all subunits the preservation of fish and aquatic species habitat would continue to result in direct benefits to soil and water resources. Permitted activities that may impact aquatic habitat would be mitigated through SOPs. Under the action alternatives additional protective measures would include restricting surface disturbance in watersheds identified as Riparian Conservation Areas (RCAs). In all subunits the acreage that would be protected by RCAs is greatest in Alternative B and progressively less for Alternatives C and D. Under Alternative A, there would be no effect because RCAs were not identified.

Effects from Vegetative Communities and Invasive Species

Soil and water resources benefit where vegetation management supports healthy, productive, and diverse populations and communities of native plants and animals. Measures to protect and/or restore healthy functioning watersheds, riparian areas, and associated vegetative communities would minimize disturbance of soil resources and protect water quality (BLM 2009e). Implementation of measures to protect vegetation, both terrestrial and wetlands, on a project-specific basis, directly provide additional protection for soil and water resources. The implementation of SOPs and leasing stipulations which protect upland and riparian vegetation, contribute to water quality and healthy soils because vegetation can stabilize erosion-prone soils, and reduce sediment influx to streams. These beneficial effects from vegetation management would be substantially similar for watersheds in all subunits and across all alternatives.

Management measures to protect special status plant or animal species would have similar beneficial soil and water resource impacts under all alternatives. Special Status Species protection would likely include minimizing permitted activities and/or restricting access in selected areas which would help reduce potential for disturbance of soils and possible water quality impacts.

Invasive species can adversely alter local ecosystems. Impacts may include species damage to native plant communities, increased soil erosion and sedimentation in streams, altered soil

chemistry and nutrient composition, and reduced diversity of native plants (Hawkins 2000; Chapin et al, 2000). Functionally healthy and established natural plant communities are better able to resist invasions by alien plant species.

Invasive aquatic species are of particular concern in the planning area because of the vast number of waterways which could serve as invasive pathways. Aquatic invasive species can clog waterways, disrupt groundwater flows, degrade water quality, and lead to major changes in native plant and animal communities. Relatively few invasive aquatic species have been introduced and become established in Alaska compared to other states. This is in part due to Alaska's stringent plant and animal transportation laws, geographic isolation, northern climate, small human population, and relatively few concentrated disturbed habitat areas (ADF&G 2002a).

Most aquatic invasive species come from warmer climates, and few of these species are capable of surviving in Alaska's more extreme latitudes. However, the area south of the Brooks Range has a warmer climate, more developed land, more disturbed habitats, and better road access. These factors increase the likelihood of invasive species introductions (ADF&G 2002a).

Invertebrates that pose the highest potential threats to aquatic environments include, but are not limited to, the following: New Zealand mudsnail (*Potamopyrgus antipodarum*), Zebra mussels (*Dreissena polymorpha*), Signal crayfish (*Pacifastacus leniusculus*), and spiny water flea, tiny cladoceran or aquatic crustacean. Additional information on these and other nuisance species can be found online at http://www.adfg.state.ak.us/special/invasive/ak_ansmp.pdf.

The Alaska aquatic nuisance plant species that likely pose the most significant threat of introduction and spread in Alaska include: *Elodea* spp., elodea, *Hydrilla verticillata*, hydrilla, water thyme; *Landoltia (Spirodela) punctata*, dotted duckweed; *Lythrum salicaria*, purple loosestrife; *Myriophyllum spicatum*, Eurasian water-milfoil (present); *Phalaris arundinacea*, Reed Canary grass (present); *Polygonum cuspidatum*, Japanese knotweed (present); *Spartina alterniflora*, salt marsh cordgrass; *Spartina densiflora*, dense-flowered cordgrass; and *Utricularia inflata*, swollen bladderwort.

Of further concern is didymo (or rock snot) *Didymosphenia geminata*. As described by the University of California Center for Invasive Species Research (2009), "Didymo or rock snot, is a highly invasive species of freshwater diatom that can form large and extensive mats in rivers, streams, and lakes. Didymo is native to cool temperate areas of the northern Hemisphere including Europe, North America, and Asia. Currently, didymo is expanding its range in North America and in addition to Alaska, its presence has been confirmed from Arkansas, Colorado, Idaho, Montana, New Hampshire, New York, North Dakota, South Dakota, Tennessee, Utah, Vermont, Virginia, Washington, West Virginia, and Wyoming; and in British Columbia and Alberta, Canada.

Outbreaks of didymo are thought to have contributed to the declines of freshwater invertebrate and vertebrate populations, especially fish that have important recreational value (e.g., trout fisheries). Didymo is almost certainly moved into new areas via contaminated fishing equipment (e.g., boots, waders, and line) and boats.

SOPs, combined with a preventative approach to the introduction and spread of invasive species, would provide protection for soil and water resources.

Effects from Wilderness Characteristics

Healthy soil and water resources are essential components of wilderness. Management of areas to maintain wilderness characteristics would benefit soil and water resources by minimizing development and restricting surface-disturbing activities such as OHV use.

Alternative B results in the most lands managed for wilderness characteristics with progressively less wilderness acreage for Alternatives E, C, and D. Under Alternative A, there would be no effect because no lands would be explicitly managed to maintain wilderness characteristics. Impacts would vary somewhat by subunit and alternative, but differences in effects to soil and water resources would likely not be discernible. Effects are expected to be the same for all subunits and alternatives.

Effects from Wildland Fire Ecology and Management

In all subunits and under all alternatives, wildland fire would generally be allowed to function in its natural ecological role with fire suppression activities undertaken only to protect life and property, site-specific values, or adjacent higher priority management areas. Wildland fire is an essential ecological process and natural agent of change in ecosystems. Wildland fires in Interior Alaska annually burn large areas and significantly impact soil and water resources on a landscape scale that far exceeds surface disturbance from BLM-authorized activities.

Under all alternatives, expected effects on soil and water resources from wildland fire would vary depending on several factors including topography, vegetation, permafrost, acreage burned, and fire intensity. Fire can stimulate new vegetative growth by helping maintain a mixture of vegetation types and age classes that provide soil stability, and by providing essential nutrients to the soil.

However, fires that heat soils to high temperatures can volatilize organics and produce a barren surface layer that contributes to higher rates of runoff and erosion. In general, removal of vegetation and some or all of the surface organic horizons deepens the active layer, increases effective overland flow, decreases infiltration, and produces warmer, drier soils.

Where permafrost soils are present, the amount of soil thaw after a fire is typically greatest at sites of intermediate wetness. Hence, the effect of wildland fire on Interior Alaska soils is somewhat dependent on the topography and location of the soils in a watershed. South-facing, upland soils, which are drier and permafrost-free, are not severely affected by wildland fire because they are relatively stable. Soils in the coldest (north aspect) and wettest regimes are not severely affected by wildland fire because most of the saturated organic mat and permafrost persist after fire (Ping et al. 2006). It is the marginal soils with permafrost and those located in potentially warmer, drier topographic positions, such as east and south aspect toe slopes, which are most likely to show major changes in moisture and temperature regimes after wildland fire (Swanson 1996). These changes may, in turn, change the soil classification from a poorly drained, permafrost-affected (Gelisol) to a well-drained, permafrost-free soil (Inceptisol; Viereck and Dyrness 1979, Dyrness and Viereck 1982, Moore and Ping 1989).

Where fire intensity is sufficient to remove the insulating vegetative mat on moderate to steep slopes it may result in thermokarst and mass failure of the slope which may result in substantial impacts to streams or other resources for extended periods of time.

Wildland fire-related changes in water quality are primarily the result of soil erosion and deposition of soil materials into water (Neary et al. 2005). The extent of surface erosion after a fire largely depends on the topography and soil types of the immediate area, the amount

of ice-rich frozen ground within the active layer, and the severity at which the fire burns the organic layer and underlying soils. Indirectly, wildland fires may also cause elevated streamflow temperatures, increased pH values, and changed chemical concentrations, including increased nutrient flow into streams and lakes.

Possible impacts on soil and water resources from wildland fire suppression activities include compaction or disturbance of soils from equipment, camps, and roads and fire breaks where the soil has been scraped down to the mineral horizon with heavy equipment, as well as application of chemical retardants. Under all alternatives rehabilitation of areas disturbed by wildland fire suppression activities would reduce potential long-term impacts to soil and water resources. Measures to reduce the impacts of suppression activities include limitations on the use of tracked or off-road vehicles; measures to prevent the introduction of invasive or noxious plant species; establishment of buffer zones near streams and lakes; and rehabilitation of fire and dozer lines.

Effects from Forest and Woodland Products

Soil disturbance resulting from commercial or other authorized harvest of timber and forest products could contribute to soil compaction, erosion and influx of sediment to streams, and potentially, thermokarst formation. Roads and trails created for forest harvest may result in indirect impacts on soil and water resources by facilitating off-road OHV use. Impacts would depend on several factors including site characteristics, season, harvest area, and harvest techniques.

The low value of timber resources will generally limit the extent of roads and trails that would be economic to build for access. Assuming continued low level of forest product sales, expected impacts to soil and water resources would be short-term and of limited extent. Most alternatives allow commercial harvest in some areas where it was not allowed previously and access to timber could result from trails and roads built for other activities. Impacts to soil and water resources from forest and woodland products management should be minimal for all subunits and alternatives. Site-specific impacts to soil and water resources would be analyzed and appropriate stipulations and SOPs applied to permits to mitigate impacts.

Effects from Land and Realty Actions

There are anticipated impacts to soil and water resources from lands and realty actions in all subunits and under all alternatives, particularly in designated transportation corridors. Construction of access roads, railroads, bridges, culverts, and gravel pads in easements can adversely affect local water quality through soil erosion. Indirect impacts may result from removal of vegetation cover or excavation of permafrost soil. Thawing of fine-grained soil with high moisture content may result in ground subsidence, slope instability, and siltation of streams. Thawing fine-grained permafrost soils are subject to mass flow even on relatively gentles slopes. Thawing sand and gravel deposits usually remain comparatively stable.

Development of materials sites often results in permanent loss of soil and may increase siltation to local streams. Construction of bridges and culverts may create diversion of water and subsequent soil erosion and increased siltation in streams. Designating right-of-way corridors and avoidance areas and locating rights-of-way near existing rights-of-way, or on already disturbed areas whenever possible, would help mitigate adverse effects on soil and water resources.

All of the alternatives would address land fragmentation through land acquisition or disposal. Land tenure and land use decisions are not expected to have significant impacts on soil and water resources.

Effects from Fluid Leasable Minerals

All lands are presently withdrawn from fluid minerals leasing and there are no existing legal leases. Acreage is opened to leasing under each of the action alternatives with a progressive increase in number of acres open from Alternative B, to Alternative E, to Alternative C, to Alternative D. Interest from industry is expected be limited due to the lack of BLM lands in high potential areas. Seismic exploration could occur in the Steese or Upper Black River subunits, but is unlikely during the life of the plan. A total of 20 miles of seismic line are anticipated on BLM lands.

Potential impacts from exploration/seismic related activities include damage or removal of the vegetation mat, thermokarst development, soil disturbance or water quality impacts. Nonetheless, adverse effects to soil and water resources from anticipated seismic lines would likely be negligible because seismic activity would occur during winter on frozen snow-covered ground. Impacts would be substantially similar across all alternatives and subunits. Leasing would not occur without further NEPA analysis.

Effects from Solid Leasable Minerals

All lands are presently withdrawn from solid minerals leasing and there are no existing legal leases. Acreage is opened to leasing in each of the action alternatives with a progressive increase in the number of acres open from Alternative B, to Alternative E, to Alternative C, to Alternative D.

Potential impacts from exploration related activities could include damage or removal of the vegetation mat, thermokarst development, soil disturbance or water quality impacts. If development were to occur, impacts from solid leasable mineral (such as coal) activities could include possible erosion, decreased water quality, fugitive dust from gravel roads, and soil compaction from heavy equipment. However, no solid leasable mineral development is anticipated during the life of the plan as there are no economical deposits of these types of minerals.

Effects from Locatable Minerals

Locatable mineral operations expected to occur include development of one or two large lode mines, several small- and large-scale placer mines, and multiple suction dredge operations.

Lode Mines

Money Knob near Livengood, a large lode mine prospect, will likely be developed during the life of the plan. The Money Knob prospect is on state or private land. A second large lode mine could potentially be developed on private land. Large lode mines have a large associated area of surface disturbance, resulting in permanent change to the landscape. The mines typically have high levels of human activity on-site and often require large, high-standard road access with considerable traffic.

The potential water quality contamination risks associated with lode mines, would in part, depend on the level of sulfide minerals in the waste rock. It is too early in the life of the Money Knob mine to establish whether water quality would be adversely affected. Nonetheless, surface and

groundwater quality could potentially be impacted in the area because of the generation of acid mine drainage from waste rock and mine-wall rock leaching. Acidity and level of contaminants in the tailings dam seepage water would be a long-term concern, requiring environmental monitoring.

Depending on availability of existing access to a mine site, new road and trail construction may result in substantially greater aerial extent of disturbance and greater long-term impacts to soils and water quality than the actual mine operation. Construction of roads and trails over permafrost areas may result in thermokarst (melting of ice-rich permafrost), obstruction or change in drainage, and subsequent long-term erosion of road material. The extent of soil disturbance from a mine operation varies considerably depending on access, mining methods, and watershed characteristics.

Impacts from roads can often be mitigated by such measures as restricting access to mine site workers only, limiting off-trail travel by mine workers, prohibiting hunting and off-trail use of OHVs, building the road in a manner which facilitates reclamation, and promptly closing and reclaiming the road following use.

Placer Mines

Placer mine exploration and development could occur on BLM lands on valid existing federal claims under any alternative. Historically, placer mining has occurred in the Fortymile and Birch Creek watersheds since the early 1800s and continues on federal, state, and private lands.

The majority of damage to Birch Creek and other gold-bearing watersheds occurred from dredges and draglines that mined entire valleys before environmental laws were enacted in the late 1980s.

The number of placer mining operations anticipated on BLM lands is predicted to be 37 to 67 small-scale placer mines and five to eight large-scale placer mines. Each small mine would have an anticipated total disturbance of 25 acres over the life of the mine. Large-scale placer mines are expected to disturb about 70 acres over the life of the mine. An estimated 925 to 1,675 acres of surface disturbance from small mines and 350 to 560 acres of surface disturbance from large-scale placer mines are projected to occur.

Probable impacts to soil and water resources from placer mining were described in detail in the Birch Creek Placer Mining Final Cumulative EIS (BLM 1988a) and the Fortymile River Placer Mining Final Cumulative EIS (BLM 1988c). Impacts can vary considerably depending on factors including site characteristics, size of the disturbed area, and mining methods, but where placer mining operations utilize heavy equipment the following impacts could be expected.

Generally, placer mining can have an adverse effect on the structure of the existing soil profile by stripping of overburden and riparian/wetland vegetation. The usual procedure is for the overburden (including organic materials) to be stripped, coarse underlying materials separated from gold-bearing material in the processing plant, and fine materials discharged to a series of settling ponds with recycled water used by the processing plant. There is an irretrievable loss of any soil that enters waterways and is transported downstream.

Erosion of soils from non-point sources typically contribute to the sediment load of stream systems and may result from stream crossings, roadways directly adjacent to stream channels, and improved roads and trails which converge down-gradient to stream channels.

The primary impact to water quality from mining is an increase in sedimentation and turbidity. Some direct effects on water quality can be anticipated during the development stage of

an operation due to the construction of settling ponds and stream bypasses, and through re-channelization of the stream. This would result in short-term increases in sediment levels and turbidity while equipment operates near or in the active stream channel.

It is likely that occasional high water or failure of water control structures would introduce sediments collected by the water treatment system into the stream channel. This would result in short-term increases in turbidity and sediment load levels and possible localized sedimentation of the stream substrate. The degree of impact would depend on the amount of material released and the streamflow at the time of release.

Channel morphology would be directly affected in all areas where activities associated with mining occur in the active channel; by-pass channels are usually constructed to allow mining in the active channel.

Indirect impacts to water quality would occur through non-point source erosion from disturbed areas associated with placer operations including access road and trails and equipment staging areas directly adjacent to stream channels. Channel readjustment would occur where the active channel was modified. These processes increase suspended sediment into the stream system, particularly during spring break-up and floods.

The impacts to soil and water resources could be expected to decrease after cessation of mining, successful revegetation of the disturbed areas, and the disturbed channel has stabilized. It is estimated that reestablishing vegetation on placer waste rock piles may take decades. The rate of succession (revegetation) seems to be heavily influenced by the proportions of particles of silt and clay size in the surface layer of the tailings (Rutherford and Meyer 1981).

The prevention of unnecessary or undue degradation of resources is required by 43 CFR 3809. Current regulations require all placer mine operations to recycle turbid water through settling ponds to prevent high turbidity discharge into streams and require reclamation of disturbed stream channels and riparian areas.

In the action alternatives, SOPs have been developed to reduce impacts to soil and water resources that may result from locatable mineral activities. Specific SOPs can be found in Appendix A. Additional mitigation measures, if necessary, could be developed during NEPA analysis of specific locatable mineral sites. Under all alternatives and subunits BLM would monitor water quality in selected streams and lakes to ensure that state water quality standards were met and would monitor instream flow to document changes in stream flow.

Suction Dredge

Suction dredge mining activities have the potential to affect soil and water resources, particularly if operations require access over steep terrain or permafrost soils where surface disturbance may result in increased erosion. Adverse impacts could result from equipment transport and storage, fuel spills, unauthorized expansion of existing OHV trail networks, as well as from compaction of soils at long-term camping sites associated with suction dredge mining operations.

A majority of the suction dredge operations in the planning area occur in the Fortymile River. The USGS conducted a systematic water quality study of the Fortymile River and many of its major tributaries in June of 1997 and 1998 (Wanty et al. 1999). Surface-water samples were collected for chemical analyses to establish regional baseline geochemistry values and to evaluate the possible environmental effects of suction-dredge placer gold mining and bulldozer-operated

placer gold mining (commonly referred to as cat-mining). They concluded, based on water-quality and turbidity data, that the suction dredges had no apparent impact on the Fortymile River system, although possible effects on biota were not evaluated. One of the three cat-mining operations monitored, however, had adverse impacts on local water quality and streambed morphology.

Effects from Salable Minerals

Future demand for salable minerals, primarily for road maintenance and construction, is not expected to vary substantially. Currently, there are about 160 acres of permitted material sites. It is anticipated that no more than 200 acres of authorized disturbance on BLM lands would be required to meet material demands over the next 20 years. The acreage open for salable minerals varies by alternative and subunit, but the general impacts to soil and water resources are common to all subunits.

Development of materials sites can unfavorably impact soil resources by compacting and/or removing soils. Material site characteristics vary by location but common methods for material extraction include drill and blast techniques in bedrock for rip-rap material and extraction and crushing of alluvial gravel for road material using heavy equipment. Material sites typically remain open for years. In locations where fine grain sediments are exposed, they can easily be eroded by wind and precipitation. Potential exists for increased siltation to local waterways resulting from erosion of soil and fine grained sediments from material site operations. Potential impacts would be reduced under all alternatives with implementation of SOPs and no substantial adverse impacts to soil and water resources are anticipated from management of salable minerals.

Effects from Recreation and Travel Management

Non-motorized recreation and OHV use within much of the planning area is expected to increase five to ten percent per year over the life of the plan. Impacts to soil and water resources increase with increasing levels of OHV use, especially in areas open to off-trail use. User-created OHV trail proliferation would result in increased erosion and stream sediment impacts. Potential adverse impacts to soil and water resources result from unimproved OHV stream crossings, heavy use of sites for camping along streams, and disturbance to riparian vegetation and stream banks.

Surface disturbance from construction of trails and roads on valley slopes and low areas containing ice-rich permafrost could result in formation of retrogressive thaw slumps which can have considerable long-term impacts on water quality.

The U.S. Fish and Wildlife Service (USFWS 2009c) described a nine-acre permafrost thaw slump on the Selawik River as follows: “In 2004, a large thaw slump occurred on the upper Selawik River in the Selawik National Wildlife Refuge in northwest Alaska. Since that time, the slump has transformed the once-clear river into a turbid one for more than 80 downstream river miles. Critical spawning habitat for sheefish—a large whitefish prized by subsistence and sport fishermen—lies 25 miles down river from the slump, generating concern that the heavy sediment might interfere with successful spawning and egg survival.”

Similar thaw slumps have been reported in the Yukon Territory, Canada (Rozell 2009). It is difficult to predict where and when thaw slumps may occur but resources managers should be aware they may occur, and can have substantial adverse impacts on water quality and aquatic habitat.

In all subunits, restricting OHV use to selected areas and trails, and limiting OHV weight would provide protection for soil and water resources. Recommended winter use (October 15 through April 30) of snowmobiles with a limited weight would continue to provide opportunities for recreational users during the winter months, while protecting soil and water resources.

Potential impacts to soil and water resources would be reduced under all alternatives with implementation of SOPs (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*). All recreation and transportation development decisions would be managed to reduce soil-erosion and minimize impacts to soil profiles, while water decisions would be managed to comply with State of Alaska water quality requirements.

Acreage open to summer OHV travel varies under each of the action alternatives, generally with a progressive increase in number of acres open from Alternative B, to Alternative C, to Alternative D. Hence, potential for degradation of soil and water resources is greatest under Alternative D. Alternative E defers limitations on OHV use to a travel management plan. Impacts on soil resources will be analyzed further at that time.

4.3.1.6.2. Cumulative Effects

Total cumulative impacts to soil and water resources consist of past and current impacts; these are in addition to reasonably foreseeable future impacts in the planning area, regardless of whether these impacts were from private, state or federal actions. For all subunits and alternatives, any proposed resource development involving surface disturbance has the potential to cumulatively impact soil and water resources. In the planning area incremental cumulative degradation of soils and water resources within a watershed can occur, for example, through mining operations on selected stream segments. For each individual mining operation a small direct loss of soil and some small degradation of water quality are likely. As the number of mining operations increase in a given watershed the cumulative soil loss and cumulative impact to water quality can have long-term adverse impacts on soil stability, riparian habitat, fisheries habitat and water quality. Cumulative impacts can also result from repetitive use of an area, such as a single OHV stream crossing along a user-created trail. Minor disturbance may result from a single crossing, however, multiple use of an unimproved OHV stream crossing site can result in substantial cumulative impacts including soil compaction, damage to riparian vegetation, erosion along user-created trails and potential decrease in bank stability and local water quality.

Cumulative Effects from Climate Change

The magnitude and scope of climate change impacts to soil and water resources in the planning area are expected to be substantially greater (landscape level) than impacts from all other resource programs or permitted activities. In particular, increased annual air temperatures may substantially accelerate ongoing changes in wildland fire frequency and associated effects to soil (thermokarst) and water resources in much of Interior Alaska. Permafrost degradation associated with a warming climate is second only to wildland fires as a major disturbance to boreal forests (Jorgenson and Osterkamp 2005).

Interior Alaska is projected to become warmer and drier over the next century (Rupp and Springsteen 2009b). Climate change predictions include increased wildland fire frequency, longer frost-free seasons, and decreased water availability for transpiration, lake drying, and continued thawing of permafrost soils, with formation of thermokarst topography as areas of ice-rich

permafrost melt. Permafrost melting would be expected to accelerate around disturbed areas where the insulating vegetation layer has been damaged or destroyed.

Much of the discontinuous permafrost in Alaska is within one to two degrees C. of thawing, and highly susceptible to thermal degradation (Osterkamp et al. 2000). Permafrost typically is capable of supporting heavy loads (at least on short time scales), but when permafrost thaws, the melting of the ice can create voids in the ground and soupy mud flows (Davis 2001). Thaw ponds may develop from removal of vegetation. Permafrost degradation can cause changes in surface hydrology; particularly soil moisture levels, slumping of frozen stream banks, increased erosion, and myriads of other ecological impacts as the system adjust to these disturbances (Smith 2008). Degradation of permafrost is highly variable and its topographic and ecological consequences depend on the interaction of slope position, soil texture, hydrology, and ice content (Jorgenson and Osterkamp 2005).

Warmer temperatures and a longer growing season are expected to increase evapotranspiration enough to outweigh a regional increase in precipitation (Rupp and Springsteen 2009b). Hence, there is uncertainty whether the projected climate warming trend will contribute to an overall increase in wetlands or stream flow. According to Smith (2005), initial permafrost warming may lead to development of thermokarst and lake expansion, followed by lake drainage as the permafrost degrades still further. MacLean et al. (1999) found higher fluxes of dissolved organic carbon (DOC), dissolved organic nitrogen (DON) and dissolved inorganic nitrogen (DIN) into stream water from upland soils with extensive permafrost compared to areas with limited permafrost.

Thawing permafrost and the resulting microbial decomposition of previously frozen organic carbon is one of the most significant potential feedbacks to the atmosphere from terrestrial ecosystems in a changing climate. Schuur et al. (2009) found “areas that thawed over the past 15 years had forty percent more annual losses of old carbon than minimally thawed areas, but had overall net ecosystem carbon uptake as increased plant growth offset these losses. In contrast, areas that thawed decades earlier lost even more old carbon, a seventy-eight percent increase over minimally thawed areas; this old carbon loss contributed to overall net ecosystem carbon release despite increased plant growth. Their studies document significant losses of soil carbon with permafrost thaw that, over decadal time scales, exceeds increased plant carbon uptake at rates that could make permafrost a large carbon source in a warmer world.

Cumulative impacts to soil will likely include increased surface disturbance in the form of thaw slumps and thaw ponds and thermokarst topography; cumulative impacts to water resource are uncertain but a decrease in permafrost will affect levels of groundwater and river runoff as well as water chemistry. Over the life of this plan newly thawed permafrost areas will likely have a net uptake of carbon because increased plant growth would more than offset carbon loss from the melted permafrost. However, in the long-term (>20 years), release of carbon from continued melting of permafrost would likely contribute to increased atmospheric carbon dioxide and climate warming.

Cumulative Effects of Land and Realty Actions

Cumulative impacts to soil and water resources from land and realty actions include past and current impacts and reasonably foreseeable future impacts in the planning area from private, state or federal actions. For all subunits and alternatives proposed land and realty actions that involve surface or stream disturbance have the potential to cumulatively impact soil and water resources.

There are no expected future changes in access to military lands or state lands. There are relatively few BLM transportation corridors within the 30 million-acre planning area. Cumulative effects of land and realty actions on BLM lands would likely be minor compared to actions on state and private lands.

Cumulative Effects of Locatable Minerals

Placer mine development has occurred in the Steese, White Mountains, and Fortymile subunits since the early 1800s using a variety of mechanized methods including dredges, draglines, dozers and excavators. The soil profile is typically destroyed for long periods in areas of active dredging or sluicing, and shorter term impacts of soil compaction and alteration in areas of facilities, roads, and trails. Water quality is often degraded by increased siltation, depending on site characteristic and the type of mining operation.

The total disturbed area from historic placer activity on BLM-managed lands in the planning area is estimated at 7,500 acres. The action alternatives in this RMP recommend lifting mineral withdrawals in selected areas, potentially resulting in development of new access roads and mine operations. However, a substantial portion of the projected mining would likely occur in previously mined areas. Depending on the Alternative, development of an estimated 37 to 67 small-scale (20 to 30 acres) placer mines and five to eight large-scale (60 to 80 acres) would be expected on BLM-managed land during the life of the plan.

In its 2007 Mineral Industry Report, the Alaska Division of Geologic and Geophysical Surveys (DGGS), lists 81 separate companies or individuals that were estimated to be producing gold in the planning Area (Szumigala et al. 2008). The amount of acreage on state and private land that has been disturbed or reclaimed by mining operations within the planning area is uncertain.

Two large-scale lode mines, Pogo and Fort Knox, are in operation on state lands within the planning area. Two additional large lode mines may be developed within the planning area on state or private land within the life of this plan. One potential lode mine "Money Knob," is located near the town of Livengood along the western boundary of the White Mountains subunit. A second potential lode mine, LWM, is located about 35 miles northwest of the town of Chicken in the Fortymile subunit. If potential lode mines are developed, varied impacts to soil and water resources would be expected depending on type of mine development and ore processing methods.

Cumulative Effects of Recreation and Travel Management

The effects of past, present and future actions, including the increasing demand for recreational use of trails and rivers, creates changes to the landscape as a result of surface-disturbing activities, which often have cumulative impacts on soil and water resources. Continued use of OHVs on unauthorized user-created trails can reduce vegetation cover and expose soil. Exposed compacted soil surfaces reduce the infiltration of rain water and snowmelt.

The demand for recreational trails and OHV use is anticipated to increase by about ten to fifteen percent over the life of the plan. Consequently, a similar increase in surface disturbance could be expected. Lands adjoining the planning area are managed by federal, state, Native, and private entities. This is why the rules and regulations governing land and resource use may differ. Cumulative adverse effects to soil and water resources, however, would likely not exceed the anticipated demand for recreation and resources because no major new recreation or commercial developments are likely during the life of the plan. Proliferation of user-created OHV trails along the planning area boundaries would remain a concern. Where soil and water resource standards

were not met, permitted activities and practices would be modified to meet the standards. The nature of the modifications would be based on site-specific circumstances.

4.3.1.7. Special Status Species

Summary of Effects

Although the habitats of sensitive animal species vary considerably, surface-disturbing activities in riparian and wetland habitats would have the greatest potential negative effects on sensitive animal species because many sensitive species are dependent on these habitats. Therefore, alternatives which retain more area closed to locatable and leasable mineral development will generate fewer potential impacts. Few activities are predicted to occur which would directly impact the habitat type which supports most sensitive plant species (dry, steep, south-facing slopes), but these habitats may be susceptible to establishment of invasive plants, which could be facilitated by allowed activities. Sensitive plant species which occur in alpine habitats could be affected by allowance of cross-country OHV travel in some alternatives and areas (Alternatives B and C largely prohibit cross-country summer OHV travel). Climate change is likely to affect populations of sensitive plant and animal species. Even though some may be affected positively, most effects would be negative because sensitive species populations typically have lower resilience to change. Localized impacts to sensitive species from allowed activities may occur, and in general those impacts will increase from Alternative B to E to C to D. However, it is not anticipated that any alternative would trend any species towards the need for federal listing under the Endangered Species Act. Alternative E would designate the Mosquito Flats ACEC, with benefits to at least two sensitive species—trumpeter swan and short-eared owl.

4.3.1.7.1. Effects Common to All Alternatives

The effects of management alternatives on the BLM Alaska sensitive species of plants, wildlife, and fish/aquatic animals would be generally similar to those described for those species groups in the Vegetative Communities, Wildlife, and Fish and Aquatic Species sections. Notable effects on sensitive species or groups are also discussed in those sections.

Wetland, riparian, and aquatic habitats support most of the sensitive animal species. Trumpeter swan, olive-sided flycatcher, blackpoll warbler, rusty blackbird, Alaskan brook lamprey, Alaska endemic mayfly, a mayfly (*Acentrella feropagus*), and a stonefly (Alaska sallfly) are BLM Alaska sensitive species that are dependent on these habitats. The Alaska tiny shrew may also occur more frequently in riparian habitats. All action alternatives open significant areas to placer mining, which could result in substantial local impacts to riparian and aquatic habitats and species, although in varying degrees. Alternatives that maintain water quality and limit impacts to riparian habitats will best minimize impacts to sensitive animal species. Riparian Conservation Areas (where established) will reduce impacts to riparian and aquatic habitats. Requirements in all action alternatives to develop specific reclamation measures and monitor and report achievement of reclamation in plans of operations may increase reclamation success and reduce impacts.

Several sensitive aquatic animal species might be affected by BLM management. One fish species (Alaskan brook lamprey) and two insects (Alaska endemic mayfly and Alaska sallfly) occur in the planning area. A third insect is not known to, but, may occur, in the planning area (*Acentrella feropagus*, a mayfly). The lamprey is not known to occur in waters on BLM lands, but has been documented near BLM lands in the Chatanika and Chena drainages. The planning decision most likely to impact sensitive aquatic species is the recommendation (in some areas and alternatives)

to lift locatable mineral withdrawals, as it would allow increased levels of placer mining that could degrade riparian areas, stream habitats, and water quality. However, the increase in placer mining is expected to be moderate and result in mostly localized impacts. The Alaska endemic mayfly is known only from a single specimen collected on lower Birch Creek WSR near the Steese Highway bridge. It is expected to be found widely in the area, but additional inventories of adult mayflies will be necessary to confirm this. The Birch Creek WSR is closed to locatable minerals, and lands open to locatable mineral entry are far upstream from the Steese Highway bridge. For all subunits except the White Mountains (closed to locatable minerals), the expected impact to fish and aquatic resources (including BLM Alaska sensitive species) from locatable minerals would be highest for Alternative D, and progressively less for Alternatives C, E, B, and A. Under no alternative are allowed activities likely to result in a trend toward federal listing for any of these species.

Several sensitive terrestrial animal species might be affected by BLM's management and are discussed below.

Osgood's arctic ground squirrel—This species is likely found only in dry, open habitats near Circle and in the Steese and Upper Black River subunits (such as steep south-facing slopes and river bluffs, grasslands, and burned areas). It may benefit from activities that remove mature tall vegetation or promote low, early-successional habitats (such as timber removal, prescribed fire). Negative effects could occur from permanent loss of habitat (e.g., facilities development); however, this is not expected at a scale that would influence populations. No alternatives are expected to cause a trend toward federal listing of this species.

Alaska tiny shrew—This species occurs in low density within a variety of habitats, but is most common in riparian shrub habitats. It has been documented to occur in the Steese National Conservation Area near Twelvemile Summit. Widespread activities that clear large areas of vegetation could negatively impact this species. Mining could have localized effects to shrew habitat, but would not likely occur at a scale or degree to cause a trend toward federal listing.

Three sensitive passerine bird species, olive-sided flycatcher, rusty blackbird, and blackpoll warbler, are widely distributed in the planning area. All are associated to some extent with riparian or wetland habitats. Occurrence of these species in other habitats is dispersed enough that anticipated activities are unlikely to impact any of them at a population level. Alternatives that minimize impacts to riparian and wetland habitats will reduce impacts. Of the three species, the rusty blackbird is most dependent on wetlands. Recent drying of lakes and ponds may be responsible for recent population declines and this trend may continue, making protection of remaining lake and pond habitats more important for conservation of this species. However, suitable lake and pond habitats in the planning area are quite rare on BLM lands relative to areas such as Yukon Flats and Tetlin National Wildlife Refuges, so it is very unlikely that any alternative could result in population-level impacts to this species.

Trumpeter Swan—Few trumpeter nests occur on BLM lands in the planning area (26 of 7,787 swan observations occurred on BLM lands during the 2005 statewide aerial surveys). A SOP (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) that limits human disturbance within one-quarter mile of trumpeter swan nests will limit impacts to the few trumpeter swan nests in the planning area. Only large-scale activities among lakes and ponds in the Mosquito Flats area would be likely to affect more than a few nesting trumpeter swans. Alternative E designates an ACEC which would encompass most of the known nest sites in Mosquito Flats and remove mineral development and summer OHV use as potential disturbances.

The SOP was not included in the Proposed RMP because of the small number of trumpeter swan nests known on BLM lands outside of Mosquito Flats.

Two sensitive raptors, golden eagle and short-eared owl, are uncommon but widely distributed across the planning area during summer. Both occur in predominantly open (non-forested) habitats. Golden eagles nest primarily in suitable cliffs (which can be very limited in availability) while short-eared owls nest on the ground. The golden eagle is a priority raptor in this plan and the SOPs in Appendix A will limit the impact of approved activities on nesting golden eagles (assuming that adequate inventory has occurred to identify most golden eagle nests). The short-eared owl is not considered a priority raptor species and nest sites occur on the ground and are less readily identifiable and more likely to change from year-to-year, making it difficult to apply similar protective measures. However, suitable nest sites for the short-eared owl are also much less limited, and the owl is less sensitive to disturbance from human activity. In areas where owls occur in high densities, such as Mosquito Flats, impacts may occur from uncontrolled motorized vehicle use. The Mosquito Flats ACEC designated in Alternative E will maintain habitat for short-eared owls. The BLM will also follow MBTA provisions and Special Status Species management decisions. In addition to SOPs, the Bald and Golden Eagle Act (and implementing rules enacted by the USFWS) will subject approved activities near golden eagle nests to a high level of scrutiny. Potential impacting uses include recreational activities near nest sites (especially along river cliffs), large-scale mining operations, improperly designed powerlines, towers, or similar structures, and high levels of summer off-road vehicle use. The relatively low densities of eagles and short-eared owls on most BLM lands in the planning area and the low level of activities predicted will likely lead to low impacts to populations of either species in any alternative.

Most BLM sensitive plant species occur in habitats with specialized conditions such as: steep south-facing dry bluff habitats; moist alpine herbaceous sites; rocky ridges, slopes, and scree; and calcareous rocks or soils. Potential impacts to sensitive plant habitats occur mostly from summer OHV use, road and trail construction, and large mineral developments in upland habitats (such as large lode mines). Alternatives that allow locatable and leasable mineral development (or other activities that may create new roads and trails) and also allow cross-country OHV use in the same areas represent greater potential impacts to sensitive plant species. In addition to directly impacting sensitive plants and habitats through various levels of crushing, surface disturbance, or removal, these activities are likely to facilitate the spread of non-native invasive plants, which may be the largest potential impact to sensitive plant species. Large areas are opened to locatable and leasable minerals in all action alternatives (largest areas in Alternatives C and D). Alternatives that close areas to cross-country OHV use (B and C) will limit the potential effects from mineral development and other activities.. Alternative E will open a smaller area to locatable and leasable minerals but will not close any new areas to cross-country OHV use.

Given that effects from most allowed activities would remain somewhat discrete and localized (relative to the size of the planning area and the size of most species distributions), and that most habitats in the planning area would remain in an undisturbed condition, it is not anticipated that any alternative would trend any sensitive species toward federal listing. An increased emphasis on monitoring these species and their habitats is advisable to understand threats, design effective mitigation, and confirm management effectiveness and trend predictions.

4.3.1.7.2. Cumulative Effects

The effects of activities allowed under the various alternatives on BLM lands will combine with similar activities on adjacent lands to impact sensitive species. Increased inventory and monitoring is necessary for reliable assessments of impacts. Climate change is predicted to create major changes in vegetative composition on the landscape and changes in ecosystem processes. Species with limited distribution and population size, such as most sensitive species, are expected to be most sensitive to climate change. Even though climate change could benefit some sensitive species, those faced with unfavorable conditions may have limited ability to adapt due to specialized habitat requirements, small populations, and lack of connectivity to suitable habitat. Climate change impacts, in combination with the increasing regional prevalence of non-native species, will combine with other changes, including improvement in access for motorized vehicles, to increase potential negative effects on sensitive species. Basic inventory is needed to assess distributions and populations, minimize impacts, and monitor changes.

4.3.1.8. Vegetative Communities

Summary of Effects

The primary decisions affecting vegetative communities would be the opening of large areas to locatable and leasable minerals and summer OHV management. In Alternatives C through E, the most predictable change in activity would be an increase in placer gold exploration and mining occurring in areas newly opened to location. This would result in areas of impact to riparian habitats as well as impacts to vegetation related to road and trail access. Alternative E recommends retaining mineral withdrawals in more of the planning area than Alternative C, reducing potential impacts from mineral development. In Alternative C, summer cross-country travel by OHVs would generally not be allowed (except in the Upper Black River Subunit where use is very low) and this would greatly reduce impacts from OHV use and greatly reduce the potential spread of non-native invasive plants (invasive plants) with cross-country OHV use. In Alternative E, cross-country summer OHV use would be allowed (but could possibly be limited in subsequent Travel Management Plans). Also, summer OHVs will no longer be prohibited in some areas which current RMPs close to summer OHVs (this will also be subject to Travel Management Planning). The effects of several resource uses are anticipated to be small due to little activity expected, including Forest and Woodland Products, Solid Leasable Minerals, Salable Minerals, and Renewable Energy. Climate change is predicted to result in major changes to vegetation in the next 30 years as wildland fire frequency and intensity increases. Activities which facilitate the spread of invasive plants would compound the effects of climate change and an expected regional increase in prevalence of invasive plants.

4.3.1.8.1. Effects Common to All Alternatives

Effects from Air and Atmospheric Values

If lightning-ignited wildland fires are suppressed to minimize smoke effects on public health, recreation, communities, or tourism; a deviation from the natural fire regime could occur as a result, with resultant effects on vegetative communities.

Effects from Fish and Aquatic Species

Riparian areas typically support some of the most diverse and productive plant communities, and riparian vegetation is critical for proper stream functioning—providing bank stability, shading, capture of insulating snow, instream woody debris, and other functions. Although none of the BLM Alaska sensitive species plants in the planning area are known to occur primarily in riparian habitats, aquatic plants are not well studied and some rare aquatic species could occur. Riparian plant communities make up a very small portion of the landscape on an area basis but, contribute greatly to vegetative community diversity. All alternatives contain some measures to minimize impacts to fish and aquatic species habitat. In action alternatives, Riparian Conservation Areas (RCAs) and High Priority Restoration Watersheds minimize disturbance to riparian vegetation, through closures to mineral development or reclamation requirements, and are most extensive in Alternatives B and E. Reclamation objectives established for all action alternatives to maintain fisheries and aquatic habitats will also benefit vegetative resources. Once disturbed, stream bank vegetation can take decades to recover due to instability of the stream channel caused, in part, by loss of protective vegetation.

Effects from Non-Native Invasive Species

Non-native invasive plant species (invasive plants) have had major impacts on vegetative communities and ecosystems outside of Alaska. The potential impact that introduction and spread of non-native plants has on vegetative communities is large and exceeds the potential direct impacts from other surface-disturbing activities identified in this planning process. Yet introduction of non-native plants most often occurs in conjunction with surface-disturbing activities. The success of planning and management decisions in controlling the introduction and spread of non-native invasive species will be a primary factor in minimizing effects from BLM actions on the whole. Requirements for weed-free hay and mulch, certified weed-free seed, and certified weed-free gravel sources will do much to limit potential for establishment of invasive plants. Planning decisions will also affect the use of motorized vehicles, which can play a major role in spread of invasive plants. Cross-country OHV use, especially in recently burned areas, may represent the largest potential impact to vegetative communities, through spread of invasive plants.

Effects from Soil Resources

All action alternatives contain measures to limit impacts to soil, which in turn limit impacts to vegetation.

Effects from Special Status Species

Provisions to conserve special status plant species (which are common to all action alternatives) will aid in maintaining the full diversity of species present in the planning area, including unique or unusual plant communities. Surveying for BLM Alaska sensitive species plants in areas where they potentially occur prior to activities which may impact sensitive plant species will reduce the potential for impacts.

Effects from Vegetative Communities

Vegetation management goals and decisions apply to all action alternatives. Their implementation will aid in maintaining the health, productivity, and diversity of plants and plant communities. Many SOPs (Appendix A) are focused on minimizing surface disturbance, encouraging natural revegetation or use of native seed, and reducing introduction and spread of invasive plants; they will mitigate potential impacts to vegetative communities in all action alternatives.

Effects from Visual Resources

Maintaining lower—numbered VRM classes will generally be of benefit to vegetative communities, due to reduced levels of surface disturbance and lower levels of associated human activities. VRM class may be used as one indicator of management beneficial to vegetation.

Effects from Water Resources

Maintenance of water quality and natural hydrologic functions will benefit vegetation. All alternatives provide measures to protect water quality.

Effects from Wilderness Characteristics

Other planning decisions which maintain wilderness characteristics (such as maintaining naturalness and opportunities for solitude) will generally benefit vegetative communities by minimizing surface disturbance. Acres of land on which wilderness characteristics will be maintained can be an indicator of management beneficial to vegetation.

Effects from Wildland Fire Ecology and Management

BLM Alaska has recognized fire as an essential ecological process and natural agent of change to ecosystems. A large majority of BLM lands in the planning area have the Limited fire management option where wildfire is considered to have natural resource benefits, and a

near-natural fire regime will result (or at least one that reflects the prevailing climate). However, areas near the road system and communities are typically within Modified, Full, or Critical management options and wildland fire suppression will artificially modify the fire regime in these lands. Human-caused fires (which occur more frequently near the road system) can alter fire regimes; however, the BLM policy is to actively suppress all human-caused fire. The BLM decisions that alter management in an area can also result in changes to wildland fire management. An increase in public presence and establishment of human infrastructure often leads to more wildland fire suppression efforts which can cause abnormal deviations to the fire regime. Effects to vegetation of a longer fire return interval include older stand ages, changes in community composition, trend towards less productivity and growth, and larger areas of similar vegetation. Climate change will generally increase area burned, lower fire return intervals, and increase fire severity. The influence of climate change on fire regime and resulting ecosystem functions might stimulate land managers to investigate methods to slow or reduce the effects of climate change on fire and vegetation.

BLM-sensitive plant species are generally either adapted to fire or occur in habitats where wildland fire occurs rarely. Wildland fire control activities such as camps or constructed firelines could impact sensitive plants. Most sensitive plants occur in alpine areas or on steep south-facing slopes—habitats in which wildland fire suppression activities are unlikely to occur.

Effects from Wildlife

Management guidance and SOPs to minimize impacts to wildlife habitats will benefit vegetative communities. ACEC management will reduce potential impacts to vegetation through closing or placing restrictions on locatable and leasable mineral development, restricting motorized vehicle use, and other provisions. In Alternatives C and E, cross country travel will not be allowed in ACECs and crucial caribou and Dall sheep habitat following Travel Management Planning.

Effects from Forest and Woodland Products

Harvest of wood products can have major effects on vegetative communities, although assumed low levels of harvest will result in minor impacts at the planning area scale. In some aspects and under certain situations, forest harvest can have effects similar to wildland fire, including increase in vegetation productivity and growth. In some situations, timber harvest can be done with minimal effect (e.g., selective or salvage harvest during winter with adequate snow cover). Potential impacts of forest harvest include: loss of vegetation cover, conversion of vegetation to an earlier successional stage, introduction of non-native invasive plant species, and roads and trails built for access. Regeneration of tree species can sometimes be delayed by heavy grass cover following harvest. Roads and trails created for forest harvest can result in both direct and indirect impacts on vegetation, including facilitating recreational off-road OHV use and the resulting creation of additional roads and trails.

In Alternative A, commercial forest harvest is not allowed in the White Mountains NRA or Steese National Conservation Area while commercial sales could be considered in the Fortymile and Upper Black River subunits. Action alternatives allow commercial forest sales in greater portions of the planning area than Alternative A, including 84 percent of BLM lands in the planning area in Alternative C and 70 percent in Alternative E. Commercial timber salvage sales are allowed everywhere in both alternatives. Despite the large area available, it is assumed that only three to five small biomass projects might occur during the life of the plan. Assuming continued low level of forest product sales, (three free-use permits and one small sales vegetative contract during past 10 years) impacts of forest products on vegetation are anticipated to be low in all alternatives. As a result, few forestry-specific resource protection guidelines have been developed in this RMP. The low value of timber resources will generally limit the extent of roads and trails that are economic to build for access. However, most alternatives allow commercial harvest in some areas where it was not allowed previously and improved access to timber could result from access built for other activities. Sensitive plant species are not typically found to occur in commercial forest habitats, but may occur in routes used for access.

Effects from Lands and Realty

Permits for uses of BLM lands may involve uses and activities which will impact vegetation, but those activities will generally be guided by SOPs and leasing stipulations (Appendix A) and the remaining effects will be analyzed and may be reduced during the permitting process. There are no right-of-way exclusion areas in the planning area. Rights-of-way impacts would be similar to those discussed under “Effects from Locatable Minerals.” Lands which are found to contain sensitive plant species could be transferred out of BLM management if not identified for retention.

Effects from Fluid Leasable Minerals

Leasing of minerals is not anticipated during the life of the plan; should it be proposed, it will be analyzed in a separate NEPA document. Seismic exploration for oil and gas could occur in at least some alternatives and would have direct impacts on vegetation, including potentially BLM Alaska sensitive species plants. Direct destruction of vegetation occurs with clearing of seismic lines. Vegetation in seismic lines have been shown to be quite slow to recover (USFWS 2008a, section 4.11.1.1). Lines may be used by summer and winter OHVs, which can exacerbate impacts and slow or prevent vegetation recovery. A total of 20 miles of seismic line is anticipated to be constructed on BLM lands within the life of the plan, most likely in the Steese or Upper Black River subunits. Seismic lines constructed in the 1970s in the Black River Subunit were still

clearly visible in the 2013, and had mostly not returned to the original or similar vegetation type. A long-term shift in plant community can be expected at the 20 miles of lines anticipated.

Effects from Solid Leasable Minerals

Although leasing of coal would not occur without additional NEPA analysis and a land use plan amendment, exploration activities could occur in any areas open to leasing. In addition, coal inventory and exploration could also be approved in areas closed to leasing. Considerable surface disturbance may occur with exploration for coal (e.g., 250 x 250 foot trenches, 50 x 40 foot drill pad sites). Exploration for coal, if any, is anticipated to occur only in the Eagle Field (in the northern Fortymile Subunit). No leasing or exploration of other solid minerals is anticipated due to lack of known occurrence of economic quantities in the planning area. In the unlikely event that leasing of other solid minerals would occur, impacts to vegetative communities could be similar to that of large lode mines described below.

Effects from Locatable Minerals

Locatable mineral extraction operations expected to occur in the planning area include small- and large-scale placer mines, suction dredging, and large-scale lode mines (although no large-scale lode mines are anticipated on BLM lands). Impacts include direct loss of habitat from the operations and access routes, and changes in human use of the area from changes in access.

Suction dredging may impact riparian vegetation through long-term camping activities, and may disturb and/or displace wildlife in the immediate vicinity of the operation, but typically does not impact riparian vegetation directly. Travel to and from suction dredge operations may impact vegetation, depending on available access.

Placer mines typically disturb both riparian and near-stream vegetation, and also disturb the stream channel which may result in downstream effects on riparian vegetation. Placer mining typically results in a change from late seral to early seral community types. Recovery of habitats from placer mining is highly variable and may be very slow. It is dependent on success in saving of topsoil and organic matter, proper re-spreading in a time frame that maintains live seeds and vegetative parts, and establishment of vegetation on topsoil and fine-grained materials before they are washed away. Aufeis formation resulting from disturbance of stream hydrology can result in spring water flow in places that are well above the normal stream level and this could erode topsoil before revegetation occurs. Late melt of aufeis can also prevent or slow vegetation growth. Instability in the stream channel as a result of mining could also affect aquatic and riparian habitats downstream of the mine site. More discussion on stream-channel and downstream effects of placer mining can be found in the Fish and Aquatic Species section 4.3.1.4. It may require 50 years or more (following end of mining) in some areas for riparian area habitat quality to approach pre-mining conditions. Some mine sites remain in operation for many years, with a portion of the mine area disturbed for the duration of mining. Reclamation often does not proceed as planned due to changing of operators, or financial or logistical difficulties.

The number of small-scale placer mining operations on BLM lands in the planning area is predicted to range from 37 small mines in Alternative A, to 42 in Alternatives B and E, to 50 in Alternative C to 67 in Alternative D; and from five to eight large placer mines during the life of the plan (dependent on alternative); and occur mostly in the Fortymile and Steese subunits (section 4.2.1 Analytical Assumptions). Assuming 25 and 70 acres disturbed in small- and large-scale placer mines, respectively, over the life of the mines, this will result in an estimated direct surface disturbance of 925 to 1,675 acres of small-scale and 350 to 560 acres of large-scale

placer mine disturbance. These predictions for each alternative have no upper or lower bounds identified — actual numbers could be much higher or lower. Although these areas represent very small proportions of the planning area, placer operations concentrate impact on high-value and relatively uncommon stream riparian and aquatic habitats. Placer operations also will be concentrated in some drainages, and affects will persist beyond the life of this plan. In addition, the access to mine sites can cause surface disturbance and indirect impacts to many more acres than the mines themselves. Roads and trails for mining access often occur in or near riparian areas and involve multiple stream crossings.

In addition to the direct loss of habitat from road construction surface disturbance, roads and trails can cause changes to adjacent habitat including melting permafrost, obstruction or change in drainage, aufeis formation, erosion of road material, and dust deposition on adjacent vegetation or snow. Invasive species are frequently spread along roadways and by motorized vehicles. The roads and trails may also be utilized for purposes other than mining. Roads facilitate access by summer and winter OHVs to surrounding areas which may previously have been remote and inaccessible.

Impacts from roads can often be mitigated by measures such as limiting public use and off-road travel, building the road in a manner which facilitates reclamation, and promptly closing and reclaiming the road following use. However, roads frequently are open for public use during mining and are often not closed or reclaimed.

Exploration for locatable minerals may cause vegetation disturbance. During helicopter supported exploration, trees are cleared for helicopter landing sites. If the site is close enough to a road system to make road-building economical, roads may be built to each drill site, which would involve substantially more surface disturbance. Placer exploration may involve trenching and drilling, but would not normally impact the stream channel. Roads and trails built for exploration will create impacts similar to those used for mining (see above) except that they may be reclaimed immediately and thus involve lesser impact. Since mining companies do not necessarily share exploration data, multiple exploration operations could occur in the same area, extending impacts over multiple years or intensifying impacts within a year.

Winter equipment moves will normally be conducted with snow and frozen ground depths adequate to prevent major impacts. Some damage to vegetation, however, will inevitably occur (especially taller vegetation), and in some vegetation types and soils, heavy equipment moves can produce long-term changes to soils and vegetation. Jorgenson et al. (2010) found that some seismic camp move trails on the north slope on ice-rich, fine-grained soils remained disturbed after 25 years (and likely permanently) because of changes in hydrology caused by ground subsidence, despite protective minimum snow cover and frozen soil depths. Winter moves can also create or maintain trails used by OHVs.

Effects from Recreation

In general, recreation management units which allow and promote greater recreational use and access (especially motorized access) will have greater potential impacts to vegetation. In SRMAs, progressively greater disturbance of vegetation is expected on a continuum from Primitive to Semi-Primitive, Backcountry, Middlecountry and Frontcountry RMZs. ERMAs allow dispersed use and are typically remote and so, although summer motorized use is allowed, relatively little occurs. Recreational facilities impact vegetation directly (such as during construction) as well as indirectly through visitor use on or near the facility. The effects will depend on area of disturbance, the level of use and habitat. High levels of visitors can impact vegetation by

trampling, especially in areas where use is concentrated such as near facilities. Recreational use motorized vehicles typically have larger impacts to vegetation, both in area impacted and degree of modification as described below.

Effects from Travel Management

Winter OHV Use

Oversnow vehicles (snowmobiles) weighing less than 1,000 pounds curb weight are generally allowed throughout the planning area during winter months (October 15 through April 30) except in Research Natural Areas (and including RNAs in Alternative E).;. When and where there is adequate snow cover, snowmobiles generally create little impact to vegetation. Recreational snowmobilers typically do not travel in areas of low snow cover because it can be uncomfortable and hard on equipment. Shrubs and small trees may be damaged or killed when overrun by snowmobiles. The low vegetative mat is not typically impacted, but may be damaged in spots where a machine's track was spun excessively. Repeated travel on trails can pack snowcover, decreasing insulation value of the snow and in some places cause subsurface water flow to occur on the surface and "glaciering" to occur. The later melt of this ice in spring can impact vegetation growth. In general, impacts to vegetation from snowmobiles will be low in all alternatives and noticeable impacts will be limited to local areas, eg. where use is heavy, on steep slopes, or when or where snow cover is low. But improvements to vehicles and changes in use patterns and climate may increase impacts from snowmachines require closer monitoring and/or changes in management. See section 4.3.3.2 for additional discussion of potential impacts.

Cross-Country Summer OHV use

OHVs impact vegetation in as little as one to a few passes and a visible "trail" is created when vegetation is crushed and broken. Shrubs such as willow and dwarf birch are especially susceptible (Ahlstrand and Racine 1993). Ten controlled passes of a small three-wheeler caused shrub breakage and herbaceous plant compression, damage to sedge tussocks, and surface depression. With additional passes, or with shearing from tires or track cleats, ground cover vegetation and organic material became disturbed, eventually exposing mineral soils and mixing organic and mineral soils (Ahlstrand and Racine 1993). With compression from OHVs, the insulative properties of the vegetation and organic layer are reduced and the depth of thaw is increased. In permafrost soils, this removal or compression of vegetation and organic matter can lead to thermokarsting and erosion. Vegetative cover and composition may change in trails (with sedges and grasses often favored over other plants) or vegetation may be totally lost in the trail tread. The depression of the surface of the trail often leads to capture and rerouting of drainage.

When enough OHV passes occur to create visible trails, those trails tend to attract further use, leading to a network of user-created trails which vary from lightly traveled and barely visible to heavily traveled and bare soil or deep ruts. Heavy use may also lead to braided trails which increases the impacts to vegetation. The BLM has attempted to manage some of these trails to improve condition and reduce impacts to resources. Alternatives B and C propose many of these trails as "designated" or "existing" and propose that summer OHV use be limited to these trails. In contrast, Alternatives A, D, and E allow cross-country summer OHV travel.

Trails with exposed soil serve as routes of spread for non-native plant species, including invasive species. It is very difficult to monitor for initial colonization of non-native species along a user-created network of scattered trails — and even more difficult to monitor large areas that are subject to dispersed cross-country travel. Invasive species not detected soon after establishment

may be difficult or impossible to eradicate. Dispersed cross-country travel which does not result in soil exposure represents much less risk of spreading invasive plant species. Where soil is exposed, risk increases. After fires, mineral soil is either already or easily exposed so that dispersed cross-country travel creates a much greater probability of establishment of invasive plant species. Several studies have shown that roads and trails serve as conduits for movement of plant species and that vehicles are capable of distributing large amounts of weed seed (Gelbard and Belnap 2003, Christen and Matlack 2006, Rooney 2005, Hansen and Clevenger 2005).

Wildland fires in 2004 and 2005, which burned large areas of all subunits, removed brush and tree branches, making travel through previously inaccessible areas possible. Downed trees in some burned areas may make it more difficult to travel cross-country. When vegetative ground cover and organic matter is burned, trails are established after fewer OHV passes. OHV travel which removes remaining organic material may induce erosion, delaying or preventing recovery of vegetation from fire.

The increasing size and capability of OHVs also create increased capability of simply driving over and through small and medium-sized vegetation, including small trees, creating new trails that would not have been possible in the past without first clearing vegetation. On non-forested well-drained ridgetops and areas of alpine tundra, soils may be more resistant to change by OHVs, but vegetation may be removed with repeated passes, and runoff-induced erosion can result without adequate water control. When use is dispersed, a distinct trail may not be formed, but the cover and composition of vegetation over a larger area may be adversely affected. Lichens, in particular, are sensitive to damage from one to a few passes with OHVs. The single passage of an OHV over dry lichens has been observed to all but eliminate them (Ahlstrand et al. 1988), and lichens continue to be rare in disturbed areas on the North Slope after 30 years (Felix and Raynolds 1989).

Recovery of vegetation on an OHV trail can be very slow and permanent changes can result. Where the organic mat is heavily damaged, sites may continue to degrade even after use ceases. Subsidence and erosion may prevent revegetation. Changes to soils may delay revegetation. Some sites may revegetate, but with a different species composition, leaving trails visible for decades.

Allowance of cross-country travel by OHVs 1,000–1,500 pounds curb weight would result in increased impacts to vegetation (This would apply to the Fortymile subunit in Alternatives D and E and in the Black River in all action alternatives) Larger and heavier vehicles (even if they have similar ground pressures) disturb wider tracks of vegetation, create deeper tracks, and cause deeper and wider thaw bulbs (Racine and Ahlstrand 1991). However, summer OHV use is not currently (Alternative A) limited by weight in either the Black River or Fortymile subunits (except for the Fortymile Wild and Scenic River Corridor).

In the Steese subunit in Alternative B, qualified subsistence users would be allowed to access all portions of the subunit with OHVs (except RNAs) after acquiring a free permit. Relative to other alternatives, this would introduce new impacts to areas that are currently closed to summer OHV use (including the Rocky Mountain Primitive zone and Birch Creek WSR Corridor). However, use of summer OHVs for subsistence in Alternative B would be small relative to that by non-subsistence users in alternatives where cross-country use is allowed (A, D, and E). . In addition to impacts from subsistence users, some non-qualified users will be attracted by existing and new tracks and trails and use the area against regulations.

Overall, impacts to vegetation from OHV use would likely be lower in Alternative E relative to Alternatives A and D, but higher than Alternative C where OHV use is limited to Middlecountry and Frontcountry RMZs and cross-country travel is not allowed.

OHV use on designated or existing trails

Most current OHV trails in the planning area are user-created trails. The primary benefits of confining use to existing or designated trails (Alternatives B and C in all but the Upper Black River Subunit) are in limiting damage to vegetation from cross-country OHV use, limiting the continuing proliferation of new user-created trails that result, and allowing management and re-routing of existing trails. Although some vegetation impacts will occur with designated trails, because use will be concentrated on existing trails (such as trail braiding in boggy areas), these impacts will be small relative to damage from cross-country travel (including the continued creation of new tracks and trails).

Constructed trails can have characteristics and effects similar to small roads (especially those built for UTVs). The existing vegetation community is removed, usually in a tread at least twice as wide as the vehicle. If constructed trails are not designed to manage surface water flow across them (or adequately maintained), ponding or erosion will result. Constructed trails also often convert subsurface water flow into surface flow, changing plant habitat near the trail. OHV use on existing constructed and managed sustainable trails will result in little impact to vegetation beyond that caused during construction (except for potential spread of non-native invasive plant seed). Constructed trails will decrease braiding and loss of vegetation through erosion, but will typically be wider than existing non-braided two-track trails. Constructed trails can be sited in less harmful locations. In all subunits except the Upper Black River, constructed trails will replace some existing user-created trails, and benefits to vegetation will generally accrue.

Under Alternative C, travel off of existing or designated trails to retrieve downed game will be allowed. This will create the same types of impacts described above under Cross-country Summer OHV Use. However, the damage to vegetation will be only a small fraction of that which would occur when the entire area allowing limited motorized use is open to cross-country travel. Not only is the use limited to hauling of meat, but must occur near existing/designated trails. In the Fortymile subunit, where in Alternatives D and E cross-country UTV use would be widely allowed, greater impacts to vegetation would occur than in Alternatives B and C (where summer OHVs are limited to existing trails).

OHV effect on BLM Alaska sensitive species plants and riparian and wetland vegetation

Cross-country summer OHV use (which is allowed in all alternatives in the Upper Black River Subunit and Alternatives A and D in all other subunits) could impact BLM Alaska sensitive species plants as well as other rare plant species (Nawrocki 2013). Most of the known locations of sensitive plant species are either in areas closed to summer OHV use, in areas that are currently remote enough to not see OHV use, or in areas where OHVs would generally not access, such as steep, south-facing river bluffs or alpine scree. However, some sensitive species, such as *Poa porsildii* and *Montia bostockii*, in the upper South Fork Birch Creek, are found in terrain that (except for remoteness) would easily be traversed by summer OHVs and adversely impacted. The sensitive species *Ranunculus camissonis* is found in the headwaters of Champion Creek in the White Mountains NRA, in a readily accessible area currently closed to summer OHV (Alternative A). Limiting OHV use to existing trails greatly reduces the area potentially impacted by OHVs to just a small fraction of that possible with cross-country use. It also allows new trails to be sited in location which will avoid sensitive plants or rare plants and plant communities.

Wetland habitats are especially sensitive to disturbance by OHVs. Disturbance, such as OHV use leading to trail development will result in a direct removal of wetland vegetation. Depression of the insulative mat over permafrost soils can result in thermokarsting. Saturated soils are less resistant to shearing of the organic material and experience hydraulic pumping, which disturbs soil structure. On low-slope terrain, expanding bogs often result. As users divert around these boggy trails, they damage vegetation and create the same cycle, resulting in expanding bogs or an expanding network of braided trails. Any depression in the ground surface can collect and channel water and lead to alteration of drainage patterns.

Riparian vegetation may be sensitive to damage by OHVs, depending on soils and vegetation. Stream bank vegetation is often critical for channel stability. Streamflow may initiate cutting of a new channel where riparian vegetation is removed, especially during high water events. Uncontrolled OHV use along stream channels or banks may damage riparian vegetation and bank structure, resulting in alterations in stream structure and stream sedimentation. At stream crossings, vegetation is removed and widening of the channel often occurs. This change can affect auefis formation. Diversion of some or all of the stream flow down the trail sometimes occurs at stream crossings. Impacts from stream crossings can be largely eliminated with well-planned and constructed trails combined with limiting of OHV use to those trails.

Area and extent of OHV impacts on vegetation

The proportion of the large areas in each subunit currently open to motorized use on which vegetation is currently impacted by OHVs is unknown, but likely less than two percent. This area might be considered inconsequential on an ecosystem scale. However local impacts may be substantial where use is heavy. In addition, trails and their use may have impact more significant than the area they occupy, because negative impacts are often focused in sensitive or important habitats such as wetlands, riparian areas and streams, and because effects can occur beyond the trail surface — such as from establishment of non-native invasive species.

Studies conducted in Wrangell-St. Elias National Park and Preserve documented that the average OHV trail had an impact area 34.6 feet wide (Connery 1984, as cited in Meyer 2002), or 4.2 acres/mile. In an area of Denali National Park used by summer OHVs, Park staff found 22.8 miles of trails and passes (disturbance from passage of a single OHV) and a total footprint of 36.5 acres, or about 1.6 acres per mile (NPS 2007). Where use is not confined to trails, such as in non-forested, dwarf shrub habitats, dispersed use may impact a large area without creating clearly defined trails. Under Alternatives A, D, and E, cross-country OHV use will continue to be allowed and new trails will continue to be created. Few trails will recover as long as use is allowed. Few limits will be placed on the creation of new trails or damage to existing trails. The area of visibly affected ground is predicted to increase by ten to twenty-five percent in 10 years under Alternatives A and D, but there is little certainty in this estimate. Future travel management planning under the Proposed RMP (Alternative E) could limit cross-country summer OHV travel, but this is not assured and interim management is similar to Alternative A.

Airboat Use

Alternative E allows airboat use in all National Wild and Scenic River Segments, where it has previously been prohibited. Due to the ability of airboats to travel on wetland vegetation (and over short sections of upland or obstructions, vegetation damage in wetland areas adjacent to these river segments can be expected. Non-native invasive plant species could be introduced, particularly in disturbed areas. A study of airboat impacts to floating mat fens in Tanana Flats (Zacheis and Doran 2009) found that vegetation productivity declined by the third year of use.

Following four years protected from airboat traffic, woody plants, grasses and most forbs were eliminated from airboat trails; and live below ground biomass remained reduced.

Effects from Special Designations

New ACECs were proposed (Alternatives B, C, D, and E) to protect wildlife (especially sheep and caribou) and fisheries values. ACEC management will reduce potential impacts to vegetation through closing or placing restrictions on locatable and leasable mineral development, restricting motorized vehicle use, and other provisions. In Alternatives C and E, cross country travel will not be allowed in ACECs following Travel Management Planning. The Mosquito Flats ACEC will protect extensive sensitive wetland vegetation from disturbance by summer OHVs.

All existing WSR classifications will be maintained in all alternatives. Management of these river corridors will tend to minimize new surface-disturbing activities. Designation of new WSR segments under Alternative B will similarly serve to maintain vegetative values in those segments.

Effects from Hazardous Materials and Abandoned Mine Lands

Cleanup of existing hazardous materials and prevention of new spills or deposits will benefit vegetative communities by reducing potential long-term effects and by allowing timely revegetation of the site. Rehabilitation of abandoned mine lands will result in revegetation of disturbed sites. In the cleanup process, disturbance of vegetation may cause short-term impacts to vegetation, but typically this will be offset by long-term benefits of a rehabilitated site.

Effects from Subsistence

The management of federal lands to maintain subsistence resources will benefit wildlife habitat and vegetative subsistence resources. Harvest of vegetative resources by federally qualified subsistence users may impact vegetation, but such harvest is typically non-destructive (such as berry picking) and very limited in extent. Use of motorized vehicles by federally qualified subsistence users could impact vegetation in a manner similar to other motorized vehicle use and will be subject to the same regulations, with very limited exceptions conducted under a permit (eg. snowmachine use in RNAs).

4.3.1.8.2. Cumulative Effects

Climate change will result in major changes in vegetation composition across the planning area. The frequency of wildland fires is predicted to increase and result in a shift from a mature spruce-dominated landscape to one dominated by deciduous forest and shrub. The greatest amount of change will occur by 2040 (Rupp and Springsteen 2009b). Treeline will continue to rise with warming temperatures. This rise documented by Lloyd (2005) in interior Alaska has been slow, but relatively rapid rises have been documented in some places in the region (Danby and Hik 2007). The growing-season climate is predicted to become drier (despite a predicted slight increase in precipitation) due to an increase in evapotranspiration related to higher temperatures. As a result, white spruce in many sites will suffer increased drought stress (Barber et al. 2000), reduced growth, and increased insect attack. The effect of spruce bark beetle infestation in southcentral Alaska has been a dramatic decline in white spruce. Beck et al (2011) documented declines across interior Alaska in both black and white spruce radial growth and forest primary productivity with increased summer temperature. Continued warming temperatures and increased temperature-induced drought stress will negatively affect the productivity, growth, and mortality of both black and white spruce, and likely reduce the prevalence or at least change the distribution

of these species in the planning area. Drying and shrinking of some wetlands may continue. The regional prevalence of non-native plant species will continue to increase, resulting in greater potential for spread onto BLM lands.

Extreme weather events are predicted to increase in frequency and result in a variety of changes. For example, Bokhorst et al. (2009) documented extensive damage to sub-arctic dwarf shrub vegetation in Sweden following a winter warming event in which temperatures warmed to seven degrees C during December 2007. In Interior Alaska, recent extremely dry summers have resulted in several record fire years.

The increase in OHV usage could be greater than expected (analysis assumptions are five to ten percent per year increase). The number of registered OHVs in Montana increased 2.6 times in eight years (Youmans 1999); off-highway motorbike/ATV registrations in Idaho increased 23 times between 1983 and 2003 (USDA, Forest Service 2004); and the nationwide population of OHVs increased by 2.7 times in 10 years (1993 to 2003, Cordell et al. 2005). Coupled with other factors such as attraction of OHV users to constructed trails, increasing off-road capabilities of OHVs, the possibility for population growth in the Fairbanks area, the effects of wildland fires, and creation of new access (roads and trails) for mining, recreation, and utility corridors, the impact of OHVs on vegetation could increase substantially in areas open to cross-country travel. Access tends to increase incrementally, as roads and trails are extended from existing roads and trails, and both roads and trails tend to become larger and improved.

Two large lode mines are predicted to occur in the planning area during the 20-year life of the plan, one of which (Money Knob near Livengood) includes 26 federal mining claims, but no other BLM lands. Large lode mines are not predicted to occur within BLM lands during the life of the plan, in part, because of the time it takes to begin such a mine. However, additional lode mines in the area, including BLM lands opened to mineral entry, could potentially occur, either within the life of the plan or later. Large lode mines have a large area of surface disturbance, permanent change to the landscape, high levels of human activity, and typically require large, high-standard road access with considerable traffic. Access may be requested across BLM lands for mines located on non-BLM lands, resulting in direct and indirect impacts.

Increased wildland fires, increased regional prevalence of non-native species, climate change, a developing transportation network, and increasing OHV usage may all combine to create substantial effects on vegetation both directly and from enhancing conditions for spread of non-native invasive species. All action alternatives open large (but variable) proportions of BLM lands in the planning area to locatable and leasable minerals. Limiting OHV use to existing/designated trails (Alternatives B and C) will reduce potential impacts from the combination of these factors compared to Alternatives A and D. Alternative E does not restrict summer OHV use to existing/designated trails (except in ACECs and crucial caribou and Dall sheep habitats), however smaller areas are open to locatable and leasable minerals than in Alternative C, and Travel Management Plans may result in greater restrictions on cross-country OHV use.

4.3.1.9. Visual Resources

Summary of Effects

Effects to visual resources come from activities resulting in surface disturbance such as mining, trail construction, or facilities development due to changes in line, color, and texture on the

landscape. Temporary field camps associated with a variety of activities would temporarily impact visual resources by introducing different colors into a predominately green and brown landscape. Both wildland and prescribed fires affect the visual resource by changing line, form, color, and texture of burned areas in contrast to the surrounding unburned areas. Proper management of air quality, soils, vegetation, fish and wildlife would generally protect or enhance visual resources.

VRM Classes outline the level of change that could occur within that class. Identifying an area as a specific management class does not guarantee that change will take place. The discussion below identifies the impacts that may occur to the landscape from each resource if development or management activities occur. However, the potential for every acre to lose visual quality due to management in a specific VRM Class is extremely low.

The Visual Resource Inventory Classes described in Chapter 3 will be used as a base of comparison since it represents the existing condition (IM 2009-167; July 7, 2009). The table below shows the results of the VRM Inventory for the entire planning area (Appendix D, *Visual Resource Inventory*) and the acres in each BLM VRM class.

VRM Class	VRI Class (acres)	Alternative B (acres)	Alternative C (acres)	Alternative D (acres)	Alternative E (acres)
Class I	291,000	346,000	343,000	317,000	343,000
Class II	19,547,000	4,951,000	1,876,000	546,000	3,632,000
Class III	2,098,000	371,000	267,000	421,000	11,000
Class V	9,019,000	855,000	4,037,000	5,239,000	2,537,000
Total	30,955,000	6,523,000	6,523,000	6,523,000	6,523,000

4.3.1.9.1. Effects Common to All Alternatives

Effects from Temporary Field Camps

The BLM uses temporary field camps for management and inventory activities associated with many programs. These field camps may temporarily impact visual resources by introducing different colors into a predominately green and brown landscape. Field camps would be less than one acre in size and generally last fewer than two weeks in any one location. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. As viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Air and Atmospheric Values

Decisions in this plan will protect and enhance the quality of air resources associated with BLM lands. All direct or authorized emission generating activities will comply with federal and state air quality laws and regulations. The BLM will also implement interagency wildland fire smoke effects mitigation measures and consider smoke effects in all fire management activities. These actions would continue to promote visually clear skies over BLM lands, thus maintaining good visibility. Air flow from adjacent countries may impact visual resources by reducing visibility as pollutants increase. These impacts could affect all distance zones.

Effects from Cultural and Paleontological Resources

Destructive cultural resource data recovery and scientific use such as excavation and extensive subsurface testing has the potential to impact visual resources by removing vegetation and

changing landform characteristics at each site. The browns of disturbed soils and the natural revegetation process would continue to impact color for long-term. Texture contrasts between soils and adjacent vegetation would also be impacted for the long-term. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

The removal of significant paleontological resources may have the same impacts on visual resources as described above for cultural resources.

Effects from Fish and Aquatic Species, Including Special Status Species

Active rehabilitation efforts, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Other rehabilitation efforts such as recontouring the floodplain and returning the stream channel to a more natural functioning condition would result in changes to line, form, color and texture. Rehabilitation efforts would result in the area returning to a more natural looking landscape. The size and scope would depend on the size of the project.

Effects from Soil Resources

Returning lands to pre-disturbance conditions will enhance visual resources by returning disturbed lands to a more natural landscape by blending with surrounding landscape in line and form. There may be a temporary increase in sedimentation that will impact water clarity during restoration activities. The browns of disturbed soils and the natural revegetation process would continue to impact color for long-term. Texture contrasts between soils and adjacent vegetation would also be impacted for long-term. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Water Resources

Monitoring activities, such as snow courses, stream gauges and permafrost research sites would generally go unnoticed by the casual observer except if viewed in the Foreground-Middleground Zone. Restoration projects to improve water quality may have impacts on line, form, color and texture while returning the disturbed landscape to a more natural appearance over the long-term.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristic would enhance visual resources by limiting surface disturbance activities and managing for a natural landscape. Allowance of temporary structures, public use cabins, and other small facilities, such as dispersed use campsites, would impact visual resources primarily through changes to color from the matte greens of natural vegetation to other colors of buildings. Texture and form impacts would include changes from irregular, random textures of vegetation to smooth, definite geometric shapes of buildings. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Facilities development would be guided by the VRM class objectives assigned for the area where development would occur. Proper design and construction techniques can reduce visual impacts from facilities and help maintain a more natural appearing landscape. If viewed

from a higher viewpoint, facilities in the Foreground-Middleground Zone would attract the attention of the casual observer. Depending on size, facilities in the Background Zone may also attract the attention of the casual observer. As viewed from ground level, only facilities in the Foreground-Middleground Zone would attract the attention of the casual observer.

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform.

Effects from Wildland Fire Management

Both wildland and prescribed fires affect the visual resource by changing line, color, and texture of burned areas in contrast to the surrounding unburned areas. Line would change from a more regular, smooth line to a irregular, jagged line along the adjacent burned and unburned area within the Foreground-Middleground Zones. Short-term color impacts would be expected in burned areas until revegetation occurs. Fire can enhance color over time by creating more diversity in the hues and colors associated with a more diverse vegetation composition. Vegetation texture can change from a medium to fine, compact texture in natural areas to a coarse, sparse texture in burned areas as a result of fire. Burned areas, if viewed in the Foreground-Middleground and Background zones, would attract the attention of the casual observer. Both wildland and prescribed fires impact visual resources by reducing visibility by smoke. These impacts may last only a day but could last longer. Fire suppression activities cause impacts to visual resources by introducing changes in color, texture, and line to a natural landscape. Colors change from the various hues of green vegetation and predominately brown soils and organic materials. Texture changes from a natural medium, subtle texture of vegetation to a coarse, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and human-constructed fireline could occur. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. As viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Rehabilitation of the fireline, which decreases the color contrast, a line contrast may be long-term depending on the vegetation composition between the undisturbed natural area and the disturbed fireline. These impacts may attract the attention of the casual observer in both the Foreground-Middleground and Background zones.

Other treatments such as mechanical fuel reduction using select cut, shaded fuel break pile and burn would have limited impact to visual resources since removal of vegetation is selective and generally appears natural. Treatments such as chemical, dozer lines and hydro axe would have greater impacts to vegetation, resulting in changes to the landscape in line, form, color and texture. Line changes from an irregular line to a more straight line where vegetation is removed, form changes from irregular to more regular appearing in the area of vegetation removal, color changes from various hues of diverse vegetation to a more uniform color of grasses as large woody materials are removed, and texture changes from an irregular texture of diverse plant communities to a more uniform texture of grasses or low woody plants. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. As viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Forest and Woodland Products, including Subsistence

Timber, firewood, and forest products harvest (e.g., birch bark), including for subsistence purposes, can impact line, form, color, and texture. The removal of trees changes the density of vegetation, a characteristic of texture. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and the harvest area is dependent on the harvest technique used. Form changes from the irregular shape of the vegetation to a regular geometric shape from removal of vegetation. Changes in color would occur from the deeper hue of trees to the more diverse colors of lower growing vegetation. Clear-cuts would have the greatest impact, while select cutting would have the least impact. Depending on size, timber harvest activities may attract the attention of the casual observer in the Foreground-Middleground Zone, Background Zone, and even the Seldom-Seen Zone.

Effects from Lands and Realty

The acquisition of lands with high resource values and the consolidation of public land holdings will enhance visual resource management by reducing inholdings and scattered parcels. Consolidation would eliminate the possibility of unmanaged development activities on private land surrounded by BLM lands and would reduce the number of isolated parcels managed by the BLM. Land disposal would impact visual resources by transferring ownership from the BLM into state-management or private ownership where possible development may occur. Development would cause changes to line form, color and texture to the landscape and vegetation.

Most of the visual impacts from land use authorizations, such as leases and rights-of-way, would be from the clearance of vegetation and support structures for pipelines, power lines, communication sites, and weather stations. These would impact visual resources by introducing straight, vertical and horizontal lines into a multi-shaped landscape. Color impacts would include changes from the matte greens of natural vegetation to glossy reflective colors of metal structures and other colors of facilities such as buildings. Texture and form impacts would include changes from irregular, random textures of vegetation to smooth, definite geometric shapes of buildings and straight lines of the right-of-way corridor. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Permits for temporary shelters would impact visual resources primarily through changes to color from the matte greens of natural vegetation to other colors of buildings. Texture and form impacts would include changes from irregular, random textures of vegetation to smooth, definite geometric shapes of buildings. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

The removal of unauthorized use structures would improve visual resources by eliminating the buildings' impact to the existing landscape characteristics of line, form, color and texture and allow the disturbed area to return to a natural state.

Effects from Renewable Energy

Land use authorizations for wind energy, solar energy and biomass utilization activities may result in impacts to visual resources. Most of the visual impacts would be from support structures for wind generators or solar panels, and vegetation harvest and would impact visual resources by introducing straight, vertical lines into a horizontal landscape. Color impacts would include

changes from the matte greens of natural vegetation to glossy reflective colors of metal structures and other colors of facilities such as towers. Some facilities may be reflective or shiny making them more visible from long distances. Texture and form impacts would include changes from irregular, random textures of vegetation to smooth, definite geometric shapes of buildings. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Fluid Leasable Minerals

Impacts associated with the seismic exploration for oil and gas would primarily be connected to temporary support facilities, survey work and overland moves. Temporary structures (e.g., weatherports, housing mounted on sleds), vehicles (e.g., rolligons, track rigs), aircraft, and human presence and associated activity would create minimal short-term impacts on visual resources. Impacts from exploration activities such as seismic line clearing of vegetation, would be primarily be changes to line, form, color and texture. Visual resources will be protected by the use of VRM class objectives and the visual contrast rating process during authorization of fluid minerals activities. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, exploration activities may attract the attention of a casual observer in the Foreground-Middleground Zone, but would be indistinguishable in the Background and Seldom-Seen Zones.

A longer lasting impact would be “green trails” resulting from overland moves or seismic exploration. These trails are not always visible for the entire route. These “green trails” are quite visible from the air to the casual observer versus on the ground where they become more difficult to recognize. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Solid Leasable Minerals

Impacts to visual resources by exploration, development and production of solid leasable mineral resources would depend on the scale of the action. Changes to line, form, color and texture of the natural landscape would result from activities such as trenching, road building for access, vegetation clearing for exploration activities, and mineral extraction processes. Mining operations would have the greatest impact to visual resources impacting line, form, color, and texture of mined areas, with the removal of vegetative cover and stockpiled materials creating form contrast between the mined areas and the stockpiled materials and the background landforms. Mining and material stockpiles would also create color contrast between the greens of vegetation and the browns of soils. Texture would change from a natural medium, subtle texture of vegetation to a course, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and disturbed landscape could occur. Buildings and other facilities would impact primarily line, color and texture by introducing straight lines in an irregular landscape and color into a predominately green landscape. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Locatable Minerals

The impacts from the extraction of locatable minerals would vary depending on the methods used and size of operation. Although not predicted to occur on BLM lands over the life of the plan, large lode mining operations would have the greatest potential impact— impacting line, form, color, and texture of mined areas— with the removal of vegetative cover and stockpiled materials creating form contrast between the mined areas and the stockpiled materials and the background landforms. Mining and material stockpiles would also create color contrast between the greens of vegetation and the browns of soils. Texture would change from a natural medium, subtle texture of vegetation to a course, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and disturbed landscape could occur. Changes in form from a natural landscape would occur where material is extracted from the ground and a resulting terraced pit is created. Typical footprint for this type of operation would be approximately 2,000 acres, plus any access road. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Smaller lode mining operations would have similar impacts as large lode mines, but the typical footprint would be approximately 600 acres, plus any access road. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. As viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Large-scale placer mining (semi-mobile plant) would have impacts to visual resources impacting line, form, color, and texture of mined areas, with the removal of vegetative cover and stockpiled materials creating form contrast between the mined areas and the stockpiled materials and the background landforms. Mining and material stockpiles would also create color contrast between the greens of vegetation and the browns of soils. Texture would change from a natural medium, subtle texture of vegetation to a course, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and disturbed landscape could occur. Typical footprint for this type of operation would be five to twenty acres plus any access road. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Hardrock mineral exploration would have impacts connected to temporary support facilities and survey work. Temporary structures (e.g., weatherports, tents and fuel storage) and aircraft, and human presence and associated activity would create minimal short-term impacts on visual resources. Impacts from exploration activities such as clearing of vegetation for trenching activities and drill pads, would be primarily be changes to line, form, color and texture. The typical footprint would be 4.4 acres. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. As viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Suction dredge operations would have the least impact, but would still impact visual resources through the development of above ground support structures. Support structures from any support facilities would also impact line, form, color, and texture by introducing vertical lines from

buildings into a predominately horizontal landscape. Colors would contrast between the greens of vegetation and the building colors. Buildings introduce a smooth texture into a more coarse texture of the vegetation, as well as a more geometric square or rectangular form into the more random and irregular form of the landscape. Typical footprint for this type of operation would be less than half an acre. Depending on size of camp, suction dredge activities may attract the attention of the casual observer in the Foreground-Middleground,.

Effects from Salable Minerals

Impacts from the extraction of salable minerals would vary depending on the methods used and size of operation. Effects on color, texture, and line would be the same as those described above for locatable minerals due to removal of vegetative cover and stockpiled materials. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Recreation

Recreation Management Zones (RMZs) are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

New development of recreational facilities, such as campgrounds, trail heads, and kiosks would impact visual resources by introducing straight vertical lines and smooth textures into a predominately horizontal, random landscape. Increased use of existing and new facilities would introduce different colors into a predominately green and brown landscape. Some of the facilities may be reflective or shiny instead of the more subtle colors of vegetation, making them more visible from long distances. Buildings and other structures introduce a more geometric square or rectangle form into the more random and irregular form of the landscape. Facility development would be guided by visual resource management class objectives assigned for the area where development would occur. Proper design and construction techniques can reduce visual impacts from recreation facilities and help maintain a more natural appearing landscape. If viewed from a higher viewpoint, facilities and recreation activities in the Foreground-Middleground Zone would attract the attention of the casual observer. Depending on size, facilities in the Background Zone may also attract the attention of the casual observer. Viewed from ground level, activities in the Foreground-Middleground Zone may attract the attention of the casual observer.

Impacts to visual resources from special recreation permits would be reduced by the use of VRM class objectives and the visual contrast rating process. The use of “Leave No Trace” and “Tread Lightly” practices would help protect visual resources. The size and scope of impacts are dependent on the size and scope of the proposed activity. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

Effects from Travel Management

Impacts from non-motorized forms of travel such as horses, mountain bikes and foot travel are primarily to color from the damage to vegetation and the resulting soil disturbances. Some changes to texture and line may occur with repeated travel over the same area or route, resulting in an artificial straight line in an otherwise irregular landscape.

Impacts from OHV use as a result of unrestricted overland travel include changes in form, line, color, and texture on the landscape. Continuous overland OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line and form occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed route or mineral soil area.

Impacts from trail construction include changes in form, line, color, and texture on the landscape. Construction leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail with trail hardening techniques and mineral soil areas. Some changes to form may also occur with construction along hill sides and over ridges as the landform is cut to make the travel width.

Most routes or trails would attract attention of the casual observer if viewed from a higher observation point and if the routes or trails were located within the Foreground-Middleground and Background zones. Trails or routes that are properly designed and viewed from ground level, however, would not generally attract the attention of a casual observer except from trailhead observation points.

Impacts from road construction are similar from trail construction. Additionally, fugitive dust is also a visual impact resulting from construction activities and from the use of gravel or natural material roads. Fugitive dust is a short-term impact that can be temporary in nature and is dependent on the amount of traffic a road receives. Road construction and use would attract the attention of the casual observer if viewed from a higher observation point and located within the Foreground-Middleground or Background zones. Roads that are properly designed and viewed from ground level, however, would not generally attract the attention of a casual observer, except as the road is traversed. Where roads intersect, where the road is at a higher elevation than the viewpoint (traveling over a hill), or is viewed from an elevated location, it may attract the attention of a casual observer if viewed in the Foreground-Middleground and Background zones.

Impacts on visual resources from unrestricted aircraft landings include minor changes in primarily color and texture on the landscape. Repeated use results in soil exposure and creates a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. The removal of rocks and debris that interfere with landing aircraft may create a contrast in texture characteristics from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a cleared soil area.

Effects from Special Designations

The determination of suitable rivers for inclusion to the National WSR System would enhance visual resources in these areas by limited surface disturbance activities and managing for a natural landscape under WSR segments designated as “wild” and “scenic.” Management of existing designated Wild and Scenic rivers (Fortymile, Birch Creek, and Beaver Creek) maintains the visual resources within designated river segments.

Visual characteristics may be related to the criteria used to determine eligibility of a river for designation if one of the Outstandingly Remarkable Values is Scenic. The degree of naturalness and the presence of human-made alterations on the landscape of a river segment is also considered when determining the classification of a river segment. The classifications of “wild,” “scenic” and “recreational” reflect the naturalness of a landscape with “wild” rivers essentially primitive and undeveloped, “scenic” rivers are still largely primitive and undeveloped by may contain some development such as roads, trails and minor facilities. “Recreational” rivers are readily accessible and may have some development along their shorelines. Management decisions to preserve these characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform on a scale of development from “wild” to “recreational.”

Effects from Hazardous Materials

Environmental remediation activities, such as the removal of surface or buried wastes from abandoned sites and removal of contaminated soils, would enhance visual resources by removing the surface or buried wastes, recontouring disturbed areas, and returning the site to blend with the existing landscape characteristics of line, form, color and texture. If viewed from an elevated viewpoint, these activities may attract the attention of a casual observer in the Foreground-Middleground and Background zones. Viewed from ground level, these activities may attract the attention of a casual observer in the Foreground-Middleground Zone.

4.3.1.9.2. Cumulative Effects

There are 33 communities (or areas) adjacent or located within the planning area that impact visual resources. These communities have set aside for possible development approximately 1,900,000 acres, some of which is adjacent to, but outside, the planning area. These developments introduce straight vertical lines, many different colors, and more smooth textures into an already disturbed landscape. Some changes to form also occurs as major surface disturbance activities take place such as road building, bridges, and gravel pits. These community areas in total, comprise approximately six percent of the planning area.

Past, present and reasonably foreseeable actions that are relevant to visual resource management include mineral development, oil and gas development, increases in motorized use, utility and transportation rights-of-way, recreation use, and community development regardless of land ownership. All of these uses can have a direct or indirect impact to visual resources and scenic quality.

Past impacts have been limited to locations with mineral development potential, recreation development, isolated sites for communication or other leases, remote cabin and community developments, and some exploration activities for oil and gas development as well as transportation systems. Most of the planning area remains in a natural state. Development has been limited due to remoteness of the majority of the planning area.

Actions that enhance wildlife and fisheries habitats, protect sensitive vegetative communities, and protect water resources, and special designations such as Areas of Critical Environmental Concern and Wild and Scenic Rivers, will also help protect visual resources by limiting development or applying restrictions to development and indirectly protect the naturalness of the area.

Present and future impacts will continue to occur on the non-BLM lands, as these are developed for resource uses such as oil and gas, minerals, forestry, and renewable energy. Rights-of ways to these developments may impact both BLM and non-BLM lands. Community expansion and remote parcel development is expected to continue, increasing the need for communication sites and other leases. Transportation needs will continue to grow as populations increase and shift locations. Only twenty-two percent of the land base in the planning area is managed by the BLM.

Climate change may have an impact on visual resources through changes to vegetative composition as deciduous trees become increasingly dominate on the landscape and frequency and intensity of wildland fire increases. Melting permafrost may cause changes to waterbodies and landforms by causing lakes to merge, or become smaller due to draining, and cliff formations slough along rivers, streams and lakes. Overall streams and rivers may have higher banks and more gravel bars as water levels drop as the planning area becomes warmer and drier over the next century. All these changes will appear natural due to the slow nature of climate change.

Land owner	VISUAL RESOURCE INVENTORY (VRI) CLASSES									
	VRI Class I		VRI Class II		VRI Class III		VRI Class IV		Totals	
	acres	%	acres	%	acres	%	acres	%	acres	%
Fortymile Subunit										
BLM	145,000	8	1,870,000	90	6,000	0	48,000	2	2,069,000	13
Non-BLM	0	0	11,040,000	80	735,000	5	2,005,000	5	13,781,000	87
Steese Subunit										
BLM	69,000	5	1,136,000	89	25,000	2	45,000	4	1,275,000	30
Non-BLM	0	0	827,000	28	1,000	0	2,097,000	71	2,925,000	70
Upper Black River Subunit										
BLM	0	0	1,478,000	63	448,000	2	435,000	18	2,361,000	30
Non-BLM	0	0	1,406,000	26	814,000	15	3,177,000	59	5,397,000	70
White Mountains Subunit										
BLM	70,000	7	950,000	93	0	0%	0	0	1,020,000	32
Non-BLM	7,000 ^a	0	840,000	40	69,000	3	1,212,000	57	2,126,000	68

^aBeaver Creek WSR Corridor managed by the USFWS with a Class I VRI special designation.

4.3.1.10. Wilderness Characteristics

Summary of Effects

Short-term and long-term effects to naturalness could occur from surface-disturbing activities associated with management of resources, mining activity, or land use authorizations. Increased access due to BLM-authorized activities may decrease opportunities for solitude while increasing opportunities for primitive, unconfined recreation. Visual resource management would generally help maintain naturalness. Recreation prescriptions would generally help maintain naturalness in areas where wilderness characteristics would be maintained. In other areas, recreation and travel management decisions may impact naturalness and opportunities for solitude. Effects on wilderness characteristics would be the lowest under Alternative B, somewhat higher under Alternatives C and E, and the greatest under Alternative D.

4.3.1.10.1. Effects Common to All Subunits and Action Alternatives

There would be no effects to wilderness characteristics in any of the subunits, in any of the alternatives, from the following programs, resources, or resource uses and they will not be analyzed further: Air and Atmospheric Values, Cave and Karst Resources, Fish and Aquatic Species, Hazardous Materials, Non-Native Invasive Species, Soil Resources, Special Status Species, Subsistence, Vegetative Resources, Water Resources, and Wildlife.

Effects from Cultural and Paleontological Resources

The discovery of cultural or paleontological resources could result in field research projects. These activities could create temporary surface-disturbing activities through digging and excavation. If these activities are conducted in an area with wilderness characteristics, a short-term loss of naturalness and solitude could occur in the immediate areas of research due to excavation activities. In the long-term, however, no impacts to wilderness characteristics are expected.

Effects from Wildland Fire and Ecology Management

Both wildland and prescribed fire could affect the wilderness characteristics of naturalness and solitude. Fire management activities (such as firefighters, aircraft support, and vehicles) could have short-term impacts to the wilderness characteristics of an area. Opportunities for solitude would be diminished during times of fire management actions. Naturalness would be impacted for as long as evidence of fire suppression actions, such as firelines or evidence of vehicle use, remains on the land.

Effects from Forest and Woodland Products

Commercial timber harvest would generally not occur in areas where wilderness characteristics are maintained. Impacts to wilderness characteristics could occur from firewood harvest and disposal of forest products. Harvest activities could impact naturalness and solitude over the short-term. The removal of vegetation would diminish naturalness until revegetation occurs. Additional impacts to wilderness characteristics could occur from activities associated with forest product removal, including cross-country vehicular travel, and temporary camps.

Effects from Lands and Realty

The BLM would not dispose of any lands managed to maintain wilderness characteristics. However, for lands whose wilderness characteristics are not being maintained, disposal of those lands could result in the loss of naturalness and opportunities for solitude and primitive recreation if the new owner chooses to develop the parcel. Sale of scattered parcels of BLM lands would have minimal effect as these lands are generally too small to have wilderness characteristics, are surrounded by state or private lands, and are not adjacent to BLM lands where wilderness characteristics are to be maintained.

Exchange of BLM parcels with state or Native lands for the purposes of consolidating land ownership could impact wilderness characteristics if the exchanged lands were developed after leaving BLM management. Exchange could also benefit wilderness characteristics if the BLM acquired lands immediately adjacent to lands where wilderness characteristics were being maintained. Exchanges could result in the remaining lands no longer being of sufficient size to make it practicable to preserve wilderness characteristics. Conversely, exchanges may also

increase the size of BLM land holdings in any given area, resulting in new areas that would be of sufficient size to make maintaining wilderness characteristics practicable.

Land use authorizations resulting in development of roads, renewable energy, or other types of facilities would diminish naturalness within the viewshed of the facility. If the authorization resulted in additional access, opportunities for solitude could decrease. Land use authorizations, however, would be considered in the context of applicable land use decisions. For example, on lands managed for a Semi-Primitive recreational setting, land use authorizations would have to be consistent with that setting and thus would be unlikely to adversely affect wilderness characteristics.

Effects from Minerals

Where lands managed to maintain wilderness characteristics overlap with mineral withdrawals enacted by ANILCA, the only effect would be from activity on valid existing mining claims. If these claims were developed the naturalness would be impacted within the viewshed of the development until the site was reclaimed to the extent that it appeared natural looking. Opportunities for solitude would be reduced during the life of the mining activity. Effects on valid existing claims would be limited to the Fortymile and Steese subunits. Similar impacts could occur in the Upper Black River subunit in areas this plan recommends to be opened to mineral entry. Due to the low mineral potential and lack of access to these areas, however, no placer mining is anticipated.

In areas where wilderness characteristics exist, but would not be maintained by other decisions in this plan, impacts to naturalness and solitude could occur from mineral decisions. The RMP would open fifteen to seventy-five percent of the planning area to new mineral entry. In these areas, naturalness and opportunities for solitude would be reduced if mining claims are staked and exploration or development occurs. However, the low mineral potential and lack of access to many of BLM lands would reduce the potential for any mining-related activity to occur. Additionally, mining claims typically affect a relatively small area, since claimants must pay an annual assessment fee. Wilderness characteristics would be unaffected if no activity occurred. For example, the Upper Black River Subunit has low mineral potential and no overland access. Although one alternative in this RMP would open all of the subunit to new mineral entry, no mining activity is anticipated. Even if mining claims were staked, they would be unlikely to involve more than a few thousand acres out of the 2.3 million-acre subunit. Wilderness characteristics would likely be unaffected on the vast majority of the subunit.

Effects from Recreation and Travel Management

Generally, lands where wilderness characteristics would be maintained are located within Recreation Management Zones that contain either Primitive, Semi-Primitive, or Backcountry recreation setting character prescriptions. These prescriptions guide recreation uses that are consistent with the maintenance of wilderness characteristics. In areas where wilderness characteristics exist, but would not be maintained, impacts to naturalness and solitude could occur from recreation and travel management decisions (e.g., construction of new motorized trails, campgrounds, or other facilities).

Effects from Visual Resources

Visual Resource Management Classes are generally assigned based on the suite of management decisions in the RMP for a given parcel of land. For example, lands managed for a Semi-Primitive

recreational setting are assigned a VRM Class consistent with maintaining that setting. VRM allows the BLM to protect visual resources while allowing other activities to occur.

Lands where wilderness characteristics would be maintained would be managed as VRM Class I or Class II which is consistent with maintenance of wilderness characteristics because low levels of development generally occur and facilities would be constructed to blend with the surrounding landscape. A VRM Class I or II designation would help maintain naturalness.

VRM Class III prescriptions could be consistent with the maintenance of wilderness characteristics if the overall level of development was kept to a moderate level, and if developments were designed not to impact the naturalness of the area and to blend with the surrounding landscape. VRM Class IV prescriptions would generally not be consistent with maintaining wilderness characteristics because the overall level of development would conflict with maintaining wilderness characteristics. In VRM Class IV areas, impacts to naturalness may occur.

4.3.1.10.2. Alternative A

Under this alternative, management for lands with wilderness characteristics is not addressed in any of the existing land use plans which were approved in the 1980s. Based on the inventory completed as part of the current planning process, wilderness characteristics exist on 99 percent of the lands in the planning area, thus these characteristics have been retained on most lands since approval of the existing land use plans in the 1980s.

4.3.1.10.3. Alternative B

Under Alternative B wilderness characteristics would be maintained on 5,059,000 acres in the Fortymile, Steese, Upper Black River, and White Mountains subunits. Effects would be the same as those discussed under section 4.3.1.10.1 Effects Common to All Subunits and Action Alternatives.

4.3.1.10.4. Alternative C

Under Alternative C wilderness characteristics would be maintained on 2,067,000 acres in the Fortymile, Steese, and White Mountains subunits. Effects are described under section 4.3.1.10.1 Effects Common to All Subunits and Action Alternatives.

4.3.1.10.5. Alternative D

Under Alternative D wilderness characteristics would be maintained on 742,000 acres in the Fortymile, Steese, and White Mountains subunits. Effects are described under section 4.3.1.10.1, Effects Common to All Subunits and Action Alternatives.

4.3.1.10.6. Alternative E (Proposed RMP)

Under Alternative E impacts to wilderness characteristics would be minimized on 3,708,000 acres in the Fortymile, Steese, Upper Black River, and White Mountains subunits. Effects are described under section 4.3.1.10.1, Effects Common to All Subunits and Action Alternatives.

4.3.1.10.7. Cumulative Effects

Cumulatively, the impacts to wilderness characteristics in the planning area are expected to be very minimal. In addition to those lands where the BLM would maintain the wilderness characteristics, in areas where the BLM would not maintain the wilderness characteristics, those characteristics may remain intact, since incompatible activities (such as mineral development, and roads) are expected to be very minimal. In all likelihood, wilderness characteristics would remain on most of BLM-managed lands for the life of the plan.

Wilderness characteristics would be maintained on 742,000 to 5,059,000 acres of BLM-managed lands, in addition to 11.2 million acres managed in a similar fashion by the National Park Service and U.S. Fish and Wildlife Service. Approximately 1.8 million acres (eighty-five percent of the preserve acreage) in the Yukon-Charley Rivers National Preserve is suitable for wilderness designation (NPS 1983). In 1987, the USFWS identified 650,000 acres in the White and Crazy Mountains, within the Yukon Flats NWR, as meeting the criteria for wilderness designation (USFWS 1987). The USFWS Minimal Management category, which applies to 9.4 million acres in the planning area, would be consistent with maintaining wilderness characteristics. When considering lands managed by other federal agencies, the amount of lands where wilderness characteristics would be maintained within the planning area, would increase from about 11.2 million acres to 16.2 million acres under Alternative B. Alternatives C, D, and E would add 2,067,000, 742,000, and 3,708,000 acres respectively.

4.3.1.11. Wildland Fire Ecology and Management

Summary of Effects

The effects of other resources or uses on wildland fire are minimal or nonexistent. One exception is when wildland fire is excluded from an area to protect other resources or uses.

4.3.1.11.1. Effects Common to All Alternatives

The following resources, resources uses, or programs would either have no effect or have negligible effects and are not analyzed further: Air, Cave and Karst, Cultural and Paleontological Resources, Fish and Aquatic Species, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildlife, Forest and Woodland Products, Land and Realty, Minerals Management, Recreation, Renewable Energy, Travel Management, Special Designations, Subsistence, and Hazardous Materials.

Effects from Wildland Fire

The biggest potential impact to Fire Management is in areas where wildland fire exclusion is the strategy. Long-term wildland fire suppression in the boreal forest does not create a fuel loading problem in the classic sense. Although the overall fuel load on any particular site may increase with time and fire exclusion, it usually does so with additional biomass added to the organic layer. It also creates large homogeneous stands of flammable fuels, usually black spruce. Species diversity is decreased. The end result is larger, more severe wildland fires that may be outside the range of natural variability. This attempt at wildland fire exclusion then impacts other resources over the long-term and with potentially high impact effects. For example, attempts excluding

wildland fire in the Fortymile caribou herd wintering range could result in significant portions of their range burning in one fire event, limiting the carrying capacity of their range.

Areas that are in the Critical, Full, or Modified fire management options have the potential to lose key ecosystem components due to fire exclusion and move from Fire Regime Condition Class 1 to Condition Class 2 or 3. Based on desired conditions for land use and resources objectives, these conditions may be mitigated through fuel management projects or a change in fire management option. If the areas were not treated fire size and severity would increase, life and property could be lost, and resources could be adversely impacted. These areas need to be monitored closely for adverse impacts.

4.3.1.11.2. Cumulative Effects

Wildland fire management decisions cross agency and administrative boundaries. There are several areas along the Alaska Highway and in the Central-Circle area that are in the Full and Critical fire management options and are adjacent to BLM lands. These areas would have impacts associated with fire exclusion, including changes in the Fire Regime Condition Class and vegetation.

The BLM commissioned University of Alaska Fairbanks to identify vegetation and fire regime response to projected future climate change (Rupp and Springsteen 2009b). The report predicts a general increase in fire activity through the end of this century in response to projected warming temperatures and less available moisture, and suggests that boreal forest vegetation would change from a spruce dominated landscape to a deciduous-dominated landscape. The most rapid changes in wildland fire activity and associated changes in vegetation would occur in the 30 to 40 years after 2009. In spite of the shift in vegetation towards less flammable younger age stands and deciduous species, there would be an overall increase in area burned annually.

4.3.1.12. Wildlife

Summary of Effects

Management to maintain several resources will generally benefit wildlife, including Soil and Water Resources, Special Status Species, Vegetative Communities, Visual Resources, Wilderness Characteristics, and Subsistence. Management of Non-Native Invasive Plants and cleanup of Hazardous materials and Abandoned Mine Lands will generally benefit wildlife habitats. In general, a natural fire regime has been considered beneficial to wildlife and is maintained over most of the planning area by the "Limited" Management Option designation in fire plans. Changes to fire management are readily made and could be utilized to slow the rapid change in vegetation expected from climate-induced changes in fire frequency and severity. Wildlife management decisions are designed to benefit wildlife resources, including one SOP which does not allow use of domestic sheep, goats, or llamas as pack animals by BLM-permittees (such as commercial outfitters) and thus reduces the potential for disease transmission to Dall sheep. However, members of the public could use these pack animals, (except in Alternative B and E), and potential impacts to Dall sheep from such use are considerable.

The types of impacts which can occur from Locatable and Fluid Leasable Minerals, Recreation, and Travel Management, are considered generally most significant and are discussed in detail below and in individual subunit discussions. Alternative E will result in fewer potential impacts to wildlife than alternative C because a high proportion of BLM lands in the planning area will

remain closed to locatable and leasable mineral development. Recreation and travel management decisions in Alternative E which allow greater access to motorized vehicles than in Alternative C (especially cross country use of summer OHVs) will result in greater impacts from those activities. The Steese, White Mountains, and Fortymile ACECs and RMZ settings will place constraints on the level of summer OHV use in much of the high-value wildlife habitat. These ACECs include a high proportion of Dall sheep habitat and of the mapped caribou calving and postcalving habitats in the planning area (including historical and recent ranges).

Cumulative effects could occur from a variety of activities on state and private lands as well as from climate change. Cumulative impacts are very uncertain, but impacts to caribou could potentially be considerable in some alternatives.

4.3.1.12.1. Effects Common to All Alternatives

Proposed management of the following resources/resource uses/programs would have no anticipated impacts to wildlife management and will not be analyzed further: Cave and Karst Resources, and Cultural and Paleontological Resources

Effects from Air and Atmospheric Values

If lightning-ignited wildland fires are suppressed to minimize smoke effects on public health, recreation, communities, or tourism, a deviation from the natural fire regime may occur, with resultant effects on wildlife habitats (described below under Effects from Wildland Fire Ecology and Management).

Effects from Fish and Aquatic Species

Riparian areas are high-quality habitats for many species of wildlife and may be crucial for some. For example, many migratory bird species achieve greatest abundance in riparian habitats. A variety of species are very dependent on stream and riparian habitats, including river otter, beaver, mink, water shrew, muskrat, waterfowl and shorebirds. In addition, there is energy and nutrient exchange between aquatic and upland habitats. Aquatic habitats often increase productivity of adjacent upland habitats, for example, through re-distribution of the energy contained in spawning salmon to adjacent areas by predators and scavengers. Most BLM Alaska sensitive species animals rely on riparian or wetland habitats. Most Bird Species of Conservation Concern are also dependent or most abundant in riparian/wetland habitats.

All alternatives contain measures to minimize impacts to fish and aquatic habitat. Those alternatives that are most successful in doing so will be most beneficial to wildlife species, with the primary determinant of impacts the amount of area open to locatable minerals. Some Riparian Conservation Areas (RCAs) and High Priority Restoration Watersheds are closed to locatable minerals. Where open, RCA management will improve reclamation success and reduce impacts to riparian vegetation. For all action alternatives, Desired Habitat Conditions are identified and SOPs will be implemented to meet Desired Habitat Conditions (section 2.6.2.3 Fish and Aquatic Species; Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations).

Effects from Non-Native Invasive Species

Non-native invasive plant (invasive plant) species have had large effects on wildlife species outside of Alaska through alteration of habitat, and this indicates the potential for impacts within

Alaska. Introduction and spread of non-native animal species is also a potential impact. All action alternatives will include attempts to monitor and control the spread of invasive species.

Requirements to use certified weed-free sources of seed, feed and mulch, and gravel will reduce potential for introduction of invasive plants from some activities. These measures will reduce impacts, but some increased abundance of native plants and loss of habitat for native wildlife species can be expected. Roads and trails (and associated vehicle use) are recognized as the primary avenues of invasive plant species spread. Alternatives which minimize creation of roads and trails and off-trail use of summer OHVs will reduce potential spread and impacts of invasive plants. Treatment of invasive plant infestations may impact wildlife habitats, but generally less than continuation and spread of invasive plants at the site.

Effects from Soil Resources

Soil is the basic foundation of wildlife habitat in the planning area. Impacts to soils result in impacts or changes to vegetation which in turn result in impacts or changes to wildlife populations. Measures which limit impacts to soils would also limit impacts to wildlife habitats. All action alternatives contain measures to limit impacts to soil.

Effects from Special Status Species

Generally, provisions to conserve Special Status Species plants and animals would benefit other wildlife as well. Such measures would be applied under all action alternatives.

Effects from Vegetative Communities

Generally, provisions related to vegetative communities are designed to maintain natural biodiversity and will benefit wildlife habitats, and they are consistent across action alternatives. All alternatives contain some provisions to protect vegetation. Alternatives B, C, D, and E have SOPs (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations) that provide more protection than in Alternative A. However, allowed uses in some alternatives may increase residual and cumulative impacts beyond current levels.

Effects from Visual Resources

To the extent that VRM classes result in changes in construction that simply shield or camouflage facilities from view, they will have little effect on wildlife. If VRM classes result in limitations to levels of surface disturbance, wildlife resources will benefit from reduced habitat disturbance and indirectly by reduced levels of human activity. Lower numbered VRM classes may be an indicator of management beneficial to wildlife.

Effects from Water Resources

Maintenance of water quality and natural hydrologic functions will benefit wildlife. All alternatives provide measures to protect water quality.

Effects from Wilderness Characteristics

Management for maintenance of wilderness characteristics (such as maintaining naturalness and opportunities for solitude) will generally benefit wildlife by reducing disturbance of habitats and reducing levels of human use to low to moderate levels. In the various alternatives, the number of acres managed for maintenance of wilderness characteristics can be an indicator of management beneficial to wildlife.

Effects from Wildland Fire Ecology and Management

These effects are described in detail in the Land Use Plan Amendment for Wildland Fire and Fuels Management for Alaska (BLM 2004b, 2005c). Short-term negative impacts from wildland fire on resident wildlife include displacement, disruption of reproductive activities, and occasional mortalities of animals with low mobility. Populations of many species can recover quickly, however, in post-burn habitats. Wildland fire helps maintain a mixture of vegetation types and age classes that provide habitat for a variety of wildlife. Fire alters habitats and may improve habitat components for some species while degrading habitat for others. Herbivores are directly affected by the changes in vegetative cover and forage associated with fire, while predators respond to both changes in cover and abundance of prey. Wildlife in Interior Alaska has evolved in the presence of wildland fire and are generally adapted to it.

Fire will tend to benefit wildlife species dependent on early successional habitats at the expense of late successional habitats. For many species, a mosaic of successional habitats is beneficial. And, on a landscape scale, a mosaic of successional habitats will result in greater wildlife species diversity. Vegetation in early seral stage communities is generally more productive than late seral communities, often resulting in higher total wildlife biomass. Grasses, sedges and herbaceous plants that quickly resprout after fire provide forage and cover for small mammals, grassland birds, and grazing species such as caribou. Browsers such as moose, hares, and ptarmigan benefit from fire when trees and shrubs begin to reestablish themselves. If fires are not too severe, sprouting of shrubs will occur soon after burning. Severe wildland fires which consume most of the organic matter are more likely to result in a change from conifer to deciduous dominance of a site. Moose generally benefit from fire due to increased production of high quality browse for 10 to 30 years after fire (McCracken and Viereck 1990, Maier et al. 2005), although population-level changes may depend on predation pressure. Prescribed fires are a management tool which may be used to improve moose habitat, but increased occurrence of wildfire will make this unnecessary except in specific situations.

Climate change will continue to increase the proportion of early-successional and deciduous-dominated habitats through increased fire frequency and severity, possibly resulting in a shift to a boreal mixed-wood forest similar to that of the aspen-dominated portion of south-central Canada (Rupp and Springsteen 2009, Mann et al 2012, Beck et al. 2011a). Fire management actions which suppress fires or reduce continuity of fuels may be useful tools to minimize or delay impacts of climate change, maintain fire regimes closer to those of the past few centuries, and protect late successional habitats and species dependent upon them (such as lichen-spruce habitats and caribou). Fire management plans are flexible and can accommodate such actions.

The short-term effects of fire on caribou winter range are negative, and vary depending upon the severity of the burn. Lichens, primary winter forage for caribou, are highly susceptible to wildfire. Impacts to habitat include reduced availability of forage lichens for generally 80 years after fire (Klein 1982, Joly et al. 2003, Collins et al. 2011). On caribou summer ranges, forage quality of vascular plants is improved by fire. Fire also affects caribou movement patterns. Caribou actively avoid burned areas for 35 to 50 years after a fire (Joly et al. 2003). It is speculated that, over the long-term, wildland fire would be beneficial to caribou by maintaining the ecological diversity of the habitat and preventing mosses from out-competing forage lichens. Few forest stands, however, may reach an advanced age at which moss replaces lichens (Collins et al. 2011). Periodic wildland fires create a mosaic of fuel types and fire conditions that naturally precludes large, extensive fires (BLM 2004b).

Wildland fire has been rare in alpine and subalpine habitats used by Dall sheep (although considerable areas adjacent to relatively low-elevation sheep habitat near limestone outcroppings in the White Mountains have burned in recent years). Fire may enhance sheep habitat by reducing encroachment of shrubs and spruce into alpine and subalpine habitats or temporarily eliminating forest cover near lower-elevation rocky habitats. Fire can also increase the amount or quality of herbaceous and graminoid forage available and reduce cover used by bears and wolves when hunting sheep.

Wildland fire has both beneficial and negative effects on bears. Beneficial effects include increasing the availability of forage plants such as berries, grasses and forbs; although some forage species may be reduced or temporarily eliminated by fire. Moose calves are an important prey item for both black and grizzly bears. Early stages of plant succession due to fire tend to increase moose production, resulting in more calves available for prey (BLM 2004b). Large burns may be avoided by bears within two or more years of the fire.

The effects of wildland fire on furbearers are variable depending on the species. Carnivorous furbearers (e.g., lynx) respond to fire in a manner similar to their prey species, though there tends to be a lag period. If prey species benefit from fire, predators do as well. Snowshoe hares, voles, and other small mammals tend to respond positively to vigorous re-growth triggered by wildland fires. Populations of species such as marten and lynx tend to increase as well, tracking those of prey species (Johnson et al. 1990). Herbivorous furbearers tend to benefit from fire due to rejuvenation of forage plants. Beavers may be negatively affected by severe fires in localized areas until forage species recolonize the area, but generally willow and deciduous tree re-growth following fires will benefit beaver.

It is difficult to generalize impacts of wildland fire on passerine birds due to the great variety of habitat requirements. Shrub communities often support the greatest number and diversity of passerine birds (Spindler and Kessel 1980, Kessel 1989). Many shrub communities are maintained or recreated by periodic fires. Within forested areas, wildland fire creates openings in the forest and snags used for nesting, perching, and foraging. Wildland fire may cause direct impacts to birds when it occurs during the nesting season, killing nestlings and destroying nests. Raptors may benefit from fire due to increased populations of small mammals and birds in response to vegetative changes after wildland fire. The timing of the benefit varies depending upon the type of prey favored by the raptor. Over the short-term, fires reduce cover available for prey species, making them more visible to raptors.

Wildland fire suppression activities also cause both direct and indirect impacts to wildlife. Wildlife habitat may be destroyed, fragmented, or degraded due to construction of fire breaks or use of OHVs. Firelines not rehabilitated in a way which prevents use by OHVs may result in unplanned OHV trails and associated use. Degradation of firelines by thermokarst or erosion may prevent vegetation re-establishment. SOPs are designed to reduce the impacts of suppression activities include limitations on the use of tracked or off-road vehicles; measures to prevent the introduction of non-native invasive plant species; limiting construction of firelines (dug to mineral soil) in riparian zones; and rehabilitation of fire and dozer lines (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations). Impacts from wildland fire suppression would be infrequent because most BLM-managed lands are currently distant from the road system and in the "Limited" management option, which will minimize the use of mechanized equipment. Lands closer to the road system will receive more fire suppression activity and greater effects.

Most BLM lands in the planning area are within the “Limited” management option and a fire regime which reflects climate conditions will result. However, areas near the road system and communities are typically within modified, full, or critical management options and fire suppression will artificially modify the fire regime in these lands with associated impacts to wildlife habitats.

Effects from Wildlife

Most wildlife decisions in the action alternatives of this RMP are common to all subunits. The decisions set desired future conditions (stated in the forms of goals) and establish Standard Operating Procedures for activities which require authorization by the BLM. A set of decisions and SOPs are applied to ACECs (and/or in some areas and alternatives to Wildlife Conservation Areas or crucial caribou and Dall sheep habitats) which will reduce potential impacts to caribou calving/postcalving habitats and Dall sheep habitats. The action alternatives vary in size of ACECs and which decisions apply to ACECs or to other delineations such as the crucial caribou and Dall sheep habitats delineated in Alternative E. So depending on the Alternative, discussion of effects may alternatively occur under *Effects from Special Designation* or *Effects from Wildlife* headings. In general, ACEC designation would be expected to be somewhat more effective in preventing impacts.

Planning area-wide SOPs limit impacts by: specifying that pipelines and roads allow free movements of wildlife; limiting vegetation removal to nesting migratory birds; designing power lines and other structures to minimize danger to and use by raptors and other birds; limiting use of domestic sheep, goats and llamas in and near Dall sheep habitat to minimize disease transmission; limiting activities in Dall sheep and caribou habitat during lambing and calving/postcalving; avoiding attraction of wildlife to food and garbage; and limiting activities allowed near nests of priority raptors. Although not part of Alternative A (no action), some of these measures are being implemented currently as stipulations in land use permits.

Many decisions will continue to rely on analyses of plans and activities (during project planning and through the NEPA process) to reduce impacts to wildlife. Avoidance of important wildlife habitat and enactment of mitigation measures may be accomplished during project planning, analysis, and implementation.

Dall Sheep Health

Wild sheep populations in the U.S. and Canada have been shown to be susceptible to diseases of domestic livestock, and a large body of knowledge has accumulated to indicate that interaction of domestic sheep and goats with wild sheep can lead to effects ranging from local extirpations to major die-offs to more subtle impacts such as reductions in lamb production and survival (WAFWA 2012, Wehausen et al 2011, Garde et al 2005). Although respiratory disease is associated with most major die-offs, other diseases of domestic livestock are a concern to wild sheep as well (Garde et al 2005).

Allowing the use of domestic sheep, goats, goats or llamas/camelids in and near Dall sheep habitats could result in substantial risks to health and productivity of Dall sheep populations through disease transmission (Garde et al. 2005). Allowance of llama/camelid use is currently considered a smaller risk (WAFWA 2007).

Although grazing permits will not be issued in the planning area in any action alternative, domestic livestock might be used as pack animals or for weed control. Horses, llamas, and

domestic goats are sometimes used as pack animals. Horses are considered to represent little disease transmission risk to Dall sheep, llamas are an uncertain but an increased risk, and domestic goats a larger risk. A few llamas have been used, but use of pack goats is currently not known to occur in the planning area. Use of pack goats may be increasing within the state. Risks from use of pack goats and llamas are not easily quantified, but are recognized to be real, with very large consequences (Garde et al. 2005). Risks of transmission from closely tended animals (as is typical with pack animals) are lower than with herds of free-ranging animals, but still significant. Some animals may escape or be lost and could associate directly with Dall sheep. Some Dall sheep near Mount Prindle have been closely approaching recreationists, attracted to the minerals in human urine, and more recently to human-provided foods (including attempting to gain entry to backpacks). This behavior would place them in almost direct contact with pack animals.

Pack goat use in bighorn sheep habitat has been prohibited in several National Forest and National Park units in the western U.S. to reduce risk of disease transmission to wild sheep. Garde et al. (2005) examined disease risks in the Northwest Territories (NWT) and concluded that "...given the naïve state of both Dall's sheep and mountain goats, we suspect that any contact between these species and domestic sheep, goats and llamas could result in disease with serious outcomes for populations of these valuable game animals." Their recommendations include this statement: "Our Risk Assessment indicates that contact between domestic sheep or goats and wild Dall's sheep or mountain goats would likely result in significant disease in the wild species with substantial negative and long-term effects on population dynamics and sustainability. We strongly advise that domestic goats not be used as pack animals, and that domestic sheep and goats not be pastured anywhere in the vicinity of Dall's sheep or mountain goat ranges within the NWT." Similarly, the Wild Sheep Working Group of the Western Association of Fish and Wildlife Agencies (WAFWA 2012) recommended the following: "It is generally acknowledged [that Dall sheep] are likely naïve to exposure to many organisms commonly carried by domestic species. Until this is confirmed and the effects of exposure to infectious organisms are clearly understood, it is essential that no association occurs between thimhorn sheep and domestic sheep or goats."

Effects from Forest and Woodland Products

The effects of Forest and Woodland Products to wildlife habitats are largely described in section 4.3.1.8 Vegetative Communities. Tree harvest can be similar in effect to fire in its effects on wildlife habitats, but is not equivalent. In addition to effects on vegetation, timber harvest can result in loss of snag trees for cavity nesting birds, direct mortality of small animals or nesting birds, disturbance/displacement of wildlife in the vicinity of the operation and along roads or trails to the site. Roads and associated activities are often the biggest impacts to wildlife from forestry. Impacts of roads and trails are discussed below under "Effects from Locatable Minerals."

Effects from Lands and Realty

Wildlife habitats on lands identified for disposal could be transferred to other ownership which may result in impacts. Acquisitions could benefit wildlife. Permits for uses of BLM lands may involve uses and activities which will impact wildlife habitats, but those activities will generally be guided by SOPs and leasing stipulations (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations) and the remaining effects will be analyzed and may be mitigated in the permitting process. There are no right-of-way exclusion areas in the planning area. Rights-of-way could have impacts similar to those discussed under "Effects from Locatable Minerals" and could contribute to fragmentation of wildlife habitats.

Effects from Fluid Leasable Minerals

Leasing of minerals is not anticipated during the life of the plan. Should leasing be proposed, it will be analyzed in a separate NEPA document. Seismic exploration for oil and gas will be allowed in portions of all subunits in at least some alternatives and could have direct impacts on wildlife, including temporary disturbance.

Direct loss of habitat occurs with clearing (cutting) and use (crushing) of seismic lines. Vegetation in seismic lines has been shown to be quite slow to recover (USFWS 2008a). Lines may later be used by summer and winter OHVs, which can exacerbate impacts and slow or prevent recovery. Continued vehicle use of the lines may result in longer-term displacement of wildlife such as caribou.

Seismic activities may affect denning bears if it occurs in close proximity (Reynolds et al. 1986, as cited in USFWS 2008a). Some bears will abandon dens in response to activity within one km of the den, especially within 200 m or early in the denning period (Linnell et al. 2000). In one study of the effects of pipeline ROWs on marten, Marklevitz (2003, as cited in USFWS 2008a) found no adverse effects of the ROWs (50 to 300 feet wide) on density of marten populations, but some apparent reluctance by marten to cross the larger ROWs. The expected 14-foot width of most seismic lines would be expected to cause little impact to marten.

Caribou would be expected to be temporarily displaced from winter seismic survey activities and/or increase movements (Bradshaw et al. 1997). As long as large areas were not undergoing seismic survey activities in the same period, caribou could likely adjust range use to avoid activities, possibly returning later. However, long-term avoidance of inactive seismic lines by caribou has been demonstrated (Dyer et al. 2001), possibly related to wolf use of the lines (James and Stuart-Smith 2000).

In general, large and medium mammal responses to seismic activities are expected to be temporary avoidance of the local area. Small rodents such as voles could suffer direct mortality, but this would be insignificant to populations in the area. Most birds are absent during the period of the year of seismic exploration (December-April), but resident species could be temporarily displaced and some early-nesters (such as owls) may have their nests destroyed.

A total of 20 miles of seismic line is anticipated to be constructed on BLM lands within the life of the plan, most likely in the Steese or Upper Black River subunits. Impact of this amount of activity would most likely be local in nature.

Effects from Solid Leasable Minerals

Leasing of coal would not occur without additional NEPA analysis and a land use plan amendment, although exploration activities could occur on any area open to leasing. Coal inventory and exploration could also be approved in areas closed to leasing. Considerable surface disturbance may occur with exploration for coal, but the coal exploration activities are expected to be minimal (section 4.2.1.3.3) and unlikely anywhere but possibly in the Eagle Field (in the northern Fortymile Subunit). No leasing or exploration of other solid minerals is anticipated due to lack of known occurrence of economic quantities in the planning area. In the unlikely event that leasing of other solid minerals would occur, impacts to wildlife could be similar to that of large lode mines (See Effects from Locatable Minerals below).

Effects from Locatable Minerals

Locatable mineral extraction operations expected to occur on BLM lands in the planning area include small- and large-scale placer mines and suction dredging. Pre-feasibility exploration for large-scale lode mining is expected, but no mines are predicted to be developed on BLM lands during the life of the plan (except for the Money Knob mine which involves only scattered federal mining claims). Impacts include direct loss of habitat from the operations and access routes, wildlife disturbance associated with the operations resulting in some level of avoidance, and changes in human use of the area from changes in access. (See also *Effects from Travel Management*).

Suction dredging, though not directly impacting riparian zones, may impact riparian vegetation through long-term camping activities, and may disturb or displace wildlife in the immediate vicinity of the operation. Nesting raptor species may be impacted by suction dredging activities occurring near nest sites, potentially through nest abandonment or reduced chick survival.

Placer mines typically disturb riparian and near-stream vegetation and the stream channel, which may also result in downstream effects on riparian vegetation and aquatic habitat. Riparian habitats are typically very high-value habitats for wildlife and provide essential habitat for some species. Many species are found in much higher densities in riparian habitats and riparian habitats may be important habitats within their home ranges, including moose and many migratory birds. Peregrine falcons and other raptors also commonly nest along streams.

Recovery of habitats from placer mining is highly variable and may be very slow. It may require 50 years or more (following initiation of reclamation) in some areas for riparian area habitat quality to approach pre-mining conditions. Some mine sites remain in operation for many years, with a portion of the mine area disturbed for the duration of mining. Reclamation often does not proceed as planned due to changing of operators, or financial or logistical difficulties. Placer mining brings a change in habitat, typically from late seral to early seral community types. The potential exists, given proper revegetation, that some wildlife species (such as moose) may benefit from the early seral vegetation communities created at revegetated mine sites. In most cases, placer mined areas have severely reduced abilities to support wildlife for many years post-disturbance. The degree of this impact could be reduced with effective planning and implementation of reclamation, including effective reclamation of stream channels (or avoidance of disturbance to the channel).

The number of placer mining operations on BLM lands in the planning area is predicted to range from 37 small mines in Alternative A, to 42 in Alternatives B and E, to 50 in Alternative C to 67 in Alternative D; and from five to eight large placer mines during the life of the plan (dependent on alternative). Actual numbers could be considerably higher, but will likely result in disturbance of small proportions of BLM lands in the planning area (less than one percent). (The area of riparian area disturbed by placer mining on BLM lands in the planning area is unknown.) However, placer operations concentrate impact on relatively uncommon stream riparian and aquatic habitats, that are generally high-value wildlife habitats, and effects will persist beyond the life of this plan. In addition, the access to mine sites can cause surface disturbance and indirect impacts to many more acres than the mines themselves. Roads and trails for mining access often occur in or near riparian areas and involve multiple stream crossings.

Depending on availability of existing access to a mine site, road and trail construction and use may create greater surface disturbance and impacts to wildlife than mines themselves (see also Vegetative Communities) and roads and trails may be utilized for purposes other than mining. Roads facilitate access by summer and winter OHVs to surrounding area which may previously

have been remote and inaccessible. Increased access can result in increased human garbage available to bears, ravens, foxes, and other scavengers, potentially leading to either increased populations of predators or destruction to protect life or property. The human activities associated with mining roads, trails, and other infrastructure can potentially result in displacement of wildlife species and result in loss of habitat effectiveness. For example, Powell (2004) noted that snowmobilers utilized a network of old mining roads to access the majority of the Ibex caribou herd's winter range.

Impacts from roads can often be mitigated by such measures as restricting access to mine site workers only, prohibiting hunting and off-trail use of OHVs by workers, building the road in a manner which facilitates reclamation, and promptly closing and reclaiming the road following use. However, roads typically become open for public use and are not often closed or reclaimed.

Exploration activities in areas opened to mineral location and entry may involve significant helicopter activity which can affect many wildlife species, but most notably caribou, sheep, and nesting raptors and trumpeter swans. SOPs will limit, but probably not eliminate, low-level aircraft activities during lambing and calving/postcalving seasons in seasonal caribou and sheep habitat (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations). Impacts may also occur to these species in other seasons or outside of identified calving and lambing habitats, and may also affect other species depending on location, altitude, and intensity of flights. Reconnaissance exploration, in which a field camp(s) may be established and daily helicopter flights transport geologists to sampling sites, will likely occur initially. Drilling exploration may occur subsequently in areas of interest. Helicopter supported exploration drilling can involve substantial helicopter activity (an estimated eight hours flight time per drill move) and will be more concentrated in a specific location. If the site is close enough to a road system to make road-building economical, roads will be built to each drill site, which will involve substantially more surface disturbance. Placer exploration may involve trenching and drilling, but would not normally impact the stream channel. Roads and trails may be built to access exploration sites, if feasible. As mining companies do not necessarily share exploration data, multiple exploration operations could occur in the same area, extending impacts over multiple years or intensifying impacts within a year.

Potential effects of mining road and facility development on caribou:

Despite a large body of evidence that caribou have a negative response to human disturbances (Johnson et al. 2005), the effects of roads and industrial development in caribou habitat are not clearly established. Many studies have demonstrated an avoidance of areas near roads and infrastructure, with most regional-scale studies indicating caribou and reindeer reduce their use of areas within one to 10 kms of development (Boulanger et al. 2012, Vistnes and Nellemann 2008). Wasser et al. (2011) detected reduced use by caribou of areas within 13 kms of winter oil exploration roads, and measured higher stress hormones in caribou that did use areas near these roads. Cameron et al. (2005) found that calving caribou avoided areas within four km of roads (ie., used them less than expected based on availability) in the Kuparuk Development Area of Prudhoe Bay and that density of calving caribou declined exponentially with road density. With increasing infrastructure over years, high-density calving shifted to undeveloped areas inland with lower forage biomass. Caribou in July and early August were relatively unsuccessful in crossing road/pipeline corridors and both abundance and movements of female caribou were lower in the oil field complex at Prudhoe Bay than in other areas along the Arctic coast. The scale of analysis may be important (Vistnes and Nellemann 2008). Following the establishment of the oil field network of roads and pipelines, a reduced portion of the caribou herd that remained continued to

occur within the oil field complex, but the distribution of those caribou was found to be unrelated to distance from infrastructure (Cronin et al. 1998, Noel et al. 2004).

In addition to avoidance of human activities at facilities, studies have documented avoidance of lightly used linear corridors (mostly seismic lines) by woodland caribou; most likely due to greater wolf use of these features (James and Stuart Smith 2000). The studies also documented woodland caribou avoid the area within 14 km of infrastructure in a diamond mine complex, which was thought due to dust deposition (Boulanger et al. 2012).

A small area of infrastructure (footprint) may impact wildlife in the surrounding area much more than might be expected. Despite measuring only one percent of their study area as developed (well sites, roads, seismic lines), Dyer et al. (2001) calculated that twenty-two to forty-eight percent of the area would receive reduced use by caribou. Similarly, Johnson et al. (2005) estimated that three uranium mines, a 20 km road, and scattered outfitter camps and mineral exploration activities within a 190,000 km² study area may have resulted in a “37 percent reduction in the area of the highest quality habitats and an 84 percent increase in the area of the lowest quality habitats.”

Roads may also affect caribou migrations. Of 28 collared caribou that approached and eventually crossed the Red Dog Mine road in northwestern Alaska during autumn migration, 29% delayed crossing the road by an average of 29 days longer than the others and traveled an average of 250 km further (Wilson et al 2016).

Caribou in open habitats will likely avoid human infrastructure at greater distances than caribou in forested habitats. Hunted wildlife populations may exhibit greater reaction to human disturbance than non-hunted populations. Roads and trails with little vehicle traffic can result in significant avoidance by animals. For example, a hunted population of elk in partially forested habitat in Oregon showed significant selection for areas farther from roads which had as little as one to four vehicles per 12 hours (Wisdom et al. 2005b) and showed an increased probability of flight response to ATV and mountain bike traffic at distances of 1,500 meters (Wisdom et al. 2005a). Increased access provided by roads and trails may benefit hunters using motorized vehicles (including subsistence hunters), but may increase poaching rates and may increase the difficulty of managing hunting seasons, due to increased harvest rate.

Population level impacts resulting from caribou avoidance of infrastructure and activities are not well understood. Cameron et al. (2005) reported that female caribou exposed to petroleum development west of the Sagavanirktok River had significantly lower parturition rates, which likely reduced herd productivity. And Arthur and DelVecchio (2009) found that calves born to cows east of the Sagavanirktok River were significantly greater in body mass and size than calves born to cows using the western calving area, which indicated that “displacement of caribou cows from preferred calving habitats may reduce fitness and survival of calves.” The Central Arctic caribou herd population increased greatly during the period of oil development. Population increase, however, may have been slowed and future decreases may be magnified, especially if infrastructure continues to expand to other areas used by caribou for calving and insect-avoidance (Cameron et al. 2005). An analysis of boreal caribou herds in Canada (Environment Canada 2008) showed that the number of calves per 100 cows in fall was negatively related to percent of the herd range disturbed. Both studies included habitats with greater size and density of infrastructure development than are anticipated on BLM lands in the planning area.

Potential effects of mining road and facility development on Dall Sheep:

Distributions and activities of the closely related bighorn sheep have been shown in many studies to be negatively influenced by human activities and OHV use (Canfield et al. 1999), however, a few studies have indicated little or no affect from recreational activities (e.g., Wehausen 1977). Each individual animal, population and situation may be unique and factors which may influence the degree of apparent effect include type of disturbance, habitat, the history of human interaction with that sheep population, and even study methods. Wild sheep can habituate in some situations to some human activities. Even in situations where sheep use habitats in proximity to human disturbance and appear to be habituated, however, impacts may still be occurring (such as altered behavior, increased energy expenditures, changes in used habitats). Papouchis et al. (2001) showed that even in an area with a considerable human activity (Canyonlands National Park) and a long history of human use, although some individual sheep appeared to habituate to road activity most did not. All sheep were disturbed by off-trail hikers. The researchers documented avoidance by sheep of a road corridor that resulted in reduced use by sheep of twenty to thirty-six percent of all suitable habitat in the study area.

Acute and chronic stress (including higher heart rates and levels of stress hormones) may also be occurring despite calm appearances among disturbed sheep (MacArthur et al. 1982). Heart rate in bighorn sheep is elevated when sheep are occupying less secure habitats (e.g., greater distances from escape terrain or lower visibility; Hayes et al. 1994). Although sheep may appear to habituate to human presence, especially in areas where resources of high value are found (e.g., ungulate mineral licks or fertilized grasses), human activities may continue to cause stress, increased energy expenditures, and reduced use of preferred habitats (Keller and Bender 2007). In some situations, mines can create habitat features attractive to wild sheep which may be beneficial (Elliott and McKendrick 1984, Bleich et al. 2009). Dall sheep are assumed to be similar to bighorn sheep in sensitivity to disturbance, but few studies have been conducted. Loehr et al. (2005) found sheep increased vigilance behaviors and ewes decreased bedding and increased foraging when in presence of humans on foot. Dall sheep in the White Mountains typically fled when approached to within one-quarter mile by a hiker and extreme flights of several miles occasionally resulted (Herriges, unpublished data).

Sheep in the planning area typically occur in small subpopulations in scattered areas of adequate habitat. Small habitat patch size results in reduced probability of population persistence (Singer et al. 2001). Several subpopulations use mineral licks which occur at substantial distance from secure sheep habitats. Human facilities and activities which reduced the ability of sheep to move freely between subpopulations or to access peripheral habitats and mineral licks could affect long-term sheep populations.

In recognition of the apparent importance of mineral licks to ungulates in the planning area, all action alternatives prohibit leasing or location of minerals within ½ or 1 mile of identified mineral licks, and only Alternative D does not also restrict activity near Dall sheep mineral licks. Moose and caribou also utilize mineral licks (and there are several mineral licks in the Fortymile subunit that are used by high numbers of Fortymile caribou), but Dall sheep generally make higher use of mineral licks. Some radiocollared White Mountains Dall sheep made daily visits to a mineral lick through most of the summer (J. Herriges, unpublished data). Indications of mineral deficiencies or imbalances, have been noted in this population (Schwafel 2013).

Bears, wolves, and wolverines have also been shown to avoid or be negatively influenced by roads and human activities. However, wolves also utilize linear features, such as trails and roads, as travel routes (and may benefit from that use) and any of these species may be attracted by human foods.

Effects from Salable Minerals

Mineral material disposal has both direct and indirect impacts on wildlife and their habitats. There is typically a direct loss of habitat with disturbance of the site. Sites are often left open for future potential uses. Once sites are reclaimed, they may recover within a relatively short time, but more typically will require decades to recover. During recovery, early seral vegetation may benefit some species. Temporary displacement of some animals may occur, especially to sensitive species such as nesting raptors, although application of SOPs (Appendix A, Standard Operating Procedures and Fluid Mineral Leasing Stipulations) will reduce disturbance of priority raptors. Direct mortality may occur during disturbance of non-mobile species, but larger impacts will result from the long-term use and potentially lengthy vegetation recovery.

Few mineral material disposal actions are anticipated on BLM lands during the life of the plan. No more than 200 acres of authorized disturbance on BLM-managed lands are anticipated necessary to meet demands over the next 20 years. There are currently there are 160 acres of potential disturbance authorized. No new sites are anticipated away from existing roads. Impacts to wildlife at a regional level from mineral material disposal would be minimal under all alternatives at predicted levels of use, but local effects will occur.

Effects from Recreation

Recreational activities can impact wildlife in a number of ways. Some level of disturbance of wildlife is generally associated with most outdoor human activity. Habituation to human activities may or may not occur, include more than a few individuals, or be complete. Effects of disturbance typically include increased energy expenditure due to movement away from the activity and avoidance of the activity or area for the short- or long-term. Disruption of behaviors can also result in lower probability of survival of young. For example, a nesting raptor may leave its nest during weather conditions hazardous to nestlings, or caribou calves may be prevented from utilizing insect avoidance habitats. Stress can also result in increased energy expenditure (as indicated by increased heart rate) and, if chronic, result in health effects such as lowered immunities to parasites. Effects of facility development and human disturbance are also discussed in “Effects of Locatable Minerals” above.

Some level of habituation to human activities may be beneficial to wildlife. This could reduce the degree of avoidance of important habitats located near human activities and reduce energy expenditures when disturbed. Habituation can also create problems—such as seeking of human foods, attraction to less favorable habitats, and concerns for human safety.

Facilities impact wildlife through direct loss of habitat, as well as displacement of wildlife through human use. The effects will depend on the level and history of use, wildlife species present, and habitat. High levels of visitors can impact vegetation by trampling. Bears may be attracted to garbage and as a result may need to be destroyed. River-floating recreational users can disturb wildlife using high-value aquatic and riparian habitats, including waterfowl with young. Nesting raptors may be briefly disturbed as floaters pass or disturbed for longer periods if camping or other sustained activities occur within sight of the nest. Motorized boat usage typically creates more disturbance due to noise, speed, unpredictability, and increased levels of traffic. Hunters may disturb wildlife, especially in situations where hunters are concentrated. Hunter activity near roads may reach levels, such as those occasionally seen along the Taylor highway, which can affect the course of caribou migrations.

Effects from Renewable Energy

Renewable energy development can have many of the same impacts associated with infrastructure of mining discussed in “Effects from locatable minerals.” Wind generators and power lines can result in mortality of birds, but can also be sited and designed to minimize this mortality. The potential for renewable energy development in the planning area is predicted to be very low.

Effects from Travel Management

Motorized vehicle use usually results in much greater numbers of visitors and trips in an area than non-motorized use. In addition, use of motorized vehicles may be more disturbing to wildlife and more damaging to wildlife habitats than non-motorized uses (due to factors such as speed, size, and noise). Allowance of motorized vehicle use and the degree of control of motorized users is a primary difference among alternatives in potential impacts to wildlife and wildlife habitats. In the White Mountains and Steese subunits in Alternatives B–D, the Primitive, Semi-Primitive, and Backcountry RMZs do not allow summer OHV use. These designations minimize potential recreation impacts to wildlife. Summer OHV use is allowed in Backcountry RMZs in the Fortymile subunit in Alternatives B–D. In Alternative E, Summer OHV use may be allowed in any RMZ in all three subunits, following Travel Management Planning. Non-motorized recreational use can also adversely affect wildlife, but typically the impacts are limited by difficulty of access and lower numbers of visitors. Non-motorized access also typically impacts vegetation and soils to a much lesser extent. All alternatives allow winter snowmobile use in all areas except the RNAs (and including RNAs in Alternative E). Winter OHV use with adequate snowcover generally causes limited impacts to soils and vegetation (see section 4.3.1.8 Vegetative Communities), but may disturb resident wildlife.

Aircraft use (especially helicopters) has the potential to disturb wildlife, but aircraft use for recreation is usually limited to fixed-wing aircraft and focused on transport to one of a relatively few suitable landing sites. The levels of use seen currently in the planning area are not considered to be generally problematic.

Impacts of OHV use on wildlife:

Off-highway vehicle usage potentially affects wildlife species in several ways, including loss of wildlife habitat, disturbance of wildlife, and through the consequences of improved access. The potential impacts to vegetation (described in section 4.3.1.8 Vegetative Communities) can result in direct loss or modification of habitat. Wildlife habitat loss can also result indirectly from establishment of invasive plant species which can be facilitated by the combination of soil disturbance and seed carrying actions of OHVs. Potential wildlife habitat loss from OHV-facilitated weed establishment likely exceeds the potential loss from direct destruction of vegetation and soils.

Disturbance of wildlife can impact individuals directly and can also lead to loss of habitat through avoidance of the area (see also *Effects from Locatable Minerals*). Disturbance distance in open habitats may be greater than in forested habitats. Wildlife may respond to disturbance by fleeing. If individuals remain in place, they will likely experience stress, as indicated by increased heart rate and other physiological responses. Many studies have shown that many big game species avoid areas near roads and trails (ie. they use areas near roads and trails less than more distant areas, resulting in effective loss of habitat (eg. Wisdom et al. 2005a and 2005b; Sawyer et al. 2006). Shanley and Pyare (2011) found that lightly used rural roads and OHV routes reduced moose occurrence in a zone 500–1,000 meters distant from the road. Road and trail densities are frequently negatively correlated with abundance of large wildlife species. Effects of roads and trails are also dependent on the amount of use, but in remote areas even low levels of use

may result in avoidance of habitats because animals are not regularly exposed to noise and visual disturbance of motorized activity. In the Gustavus, Alaska area, a low route activity of 0.25 km of vehicle travel/km²/day was found to be the threshold value at or below which moose sustained a high probability of occurrence (0.60 to 0.91, Shanley and Pyare 2011).

Where OHV use is limited to established trails, it is less disturbing to wildlife in degree and extent. Individual animals may learn that off-highway vehicles are likely to remain on the trail and are therefore more predictable. Limiting motorized vehicle use to a set of designated trails also allows planning to control trail density and route trails to avoid sensitive or high quality habitats and thereby optimize the balance between access to preferred areas and conservation of wildlife habitat (Shanley et al. 2013). Moose in central Alaska often congregate in localized areas of subalpine forest during the rut (Van Ballenberghe and Miquelle 1996) and planning and designating trails can avoid those or other areas of high wildlife density or importance.

Increased access into an area can also result in greater mortality of wildlife by legal and illegal harvest. Attraction to human foods and habituation to humans can result in removal of the animal. Predators such as grizzly bear, wolverine, and wolves frequently decline with increased access, through both mortality and avoidance (Gaines et al. 2003).

Larger trails and allowance of larger OHVs, such as UTVs create impacts more similar to those of roads. These will likely increase direct impacts to vegetation and habitat due to greater weight and larger footprint and may increase disturbance due to larger numbers of passengers and larger camps and increase wildlife mortality resulting from access to human garbage. Constructed trails can also increase average speed of OHVs on the trail, which may be even more disturbing to wildlife

Effects of cross-country OHV use:

Cross-country OHV use results in impacts to soils and vegetation (section 4.3.1.8 Vegetative Communities). Increasing numbers of OHV users and resulting levels of off-trail use will increasingly affect wildlife habitat and populations. Off-trail use of OHVs is less predictable and thus more disturbing to wildlife than use which is limited to trails. Cross-country OHV use results in uncontrolled establishment of user-pioneered trails. Planning of designated trails can be done so as to provide access while minimizing impacts (Shanley et al. 2013). Unregulated establishment of trails will often result in trails traversing and paralleling riparian habitats which are frequently the most productive habitats for many species. Trails will also become pioneered in other sensitive and productive wildlife habitats, where constructed/managed trails could be sited to avoid sensitive wildlife habitats. Off-trail use of OHVs can also crush small terrestrial species and bird nests. Construction or improvement of OHV trails can increase off-trail OHV use and associated impacts in more remote areas due to the improved access.

Open habitats in high-elevation sheep and caribou habitat may be easily traversed by OHVs, and as a result off-trail use can be extensive in area and affect vegetation cover and composition over a large area. Increased access provided by a network of trails could increase harvest of wildlife species, such as moose and caribou, to such an extent that more restrictive harvest regulations would need to be implemented. Winter use of trails created by summer OHV users may extend disturbance of sensitive wildlife habitats. Winter trails packed by snowmobile use can facilitate travel by predators and increase mortality rates of prey.

Cross-country OHV use is allowed in Alternatives A, D, and E in all subunits. In these alternatives, habitat effectiveness for most wildlife species will be diminished relative to

Alternatives B and C, and will allow continued proliferation of user-pioneered trails. The extent of this loss of habitat effectiveness is dependent on uncontrollable factors such as the rate of increase in usage of off-highway vehicles, changes in capabilities of off-highway vehicles to traverse difficult terrain, effects of large wildland fires on rate of trail proliferation, increase in non-motorized use, and increase in the regional prevalence of invasive plant seed sources. With the exception of the generally remote Black River Subunit, the growth in off-highway vehicle use in some areas is potentially large, and even minor impacts could accumulate. Scenario planning of OHV trails near Gustavus, Alaska conducted by Shanley et al. (2013) demonstrated the importance of planning in maintaining moose habitat effectiveness. Travel Management Plans for three subunits could result in decisions to restrict summer OHV travel to designated trails.

Winter OHV (snowmobile) use.

All areas (except RNAs in most alternatives) are open to small winter OHV (snowmobile) traffic. Snowmobile traffic has been demonstrated to result in disturbance of most northern ungulates. Within the planning area, where snowmobile use occurs in forested habitats, use is largely limited to cleared trails and small openings. The forest cover prevents or reduces off-trail travel and typically shields the activity from view of animals (which reduces the distance at which animals are appreciably disturbed). Where trails avoid high-value wildlife habitats and trail density remains low, the impacts to wildlife populations from a limited set of snowmobile trails in the forested areas (such as the White Mountains cabins and trails system) should be low. Snowmobiles are not similarly restricted to trails in open forest or non-forested habitats and as a result could potentially travel and disturb animals throughout a large area. In addition, animals located in non-forested habitats may be more sensitive to disturbance. Where open forest or non-forested habitats are accessible to snowmobiles, wildlife species may be impacted if use is frequent or widespread.

In addition to increasing energy expenditures, ongoing snowmobile use of these areas may cause animals such as caribou or sheep to abandon that area. Current off-trail use of open areas on BLM lands in the planning area is generally low and such use is not anticipated to increase greatly. Localized impacts to wildlife may occur in some areas, and these may increase where access is improved. Monitoring of snowmobile use and appropriate planning and management of winter trails could ameliorate impacts to caribou and other species.

Packed snowmobile trails provide routes for wolves that facilitate more efficient travel, which may increase rates of encounter of prey species and increase predation rates (an indirect impact on moose and caribou). RMZs which maintained low densities of roads and trails (e.g., Semi-Primitive or Backcountry) would minimize such effects. Travel management planning can also avoid routing groomed snowmobile trails into non-forested caribou range or other sensitive habitats or close trails which result in excessive snowmobile use in such areas. Groomed trail density is currently greatest in the White Mountains Subunit and is considered to have only minor or localized direct impacts to winter wildlife at current levels and patterns of use.

Motorboat Use

Motorboats are currently allowed on most rivers in the planning area with the exception of non-navigable portions of the Fortymile WSR--the North Fork above The Kink, Middle Fork, Joseph Creek, and Mosquito Fork above Ingle Creek. Motorboat use is limited on Beaver Creek Wild River by a restriction on the size of motors on boats launched in the Nome Creek valley at the upper end of the river and by remoteness on the lower end.

Motorboat use can disturb wildlife and result in avoidance of riparian habitats near rivers. Effects depend on the type of boat, manner of use, volume of traffic, and level of habituation of wildlife species. Relative to float boats, motorboat use will have a greater effect on wildlife due to noise, speed, and increased traffic due to their ability to travel both up and downstream. This also allows boats to remain longer in areas near wildlife, including nesting birds, or repeatedly pass by them. In remote areas, wildlife may not habituate to low or intermittent numbers of boat trips and so may be sensitive to even low amounts of traffic.

Nesting success or productivity of waterfowl and raptors such as golden eagles, bald eagles, and peregrine falcons may be affected. Fraser and Anthony (2008) summarized four studies of Bald Eagles and found that flush distances from approaching boats averaged 137-393 meters. In addition to causing birds to flush from nests, human activity near nests can cause other changes in behavior which may affect nest success, such as a decrease in amount of prey fed to nestlings (Steidl and Anthony 2000). Although eagles and other raptors may eventually adjust to motorboat activity by nesting further from the stream in future seasons or may habituate to disturbance, this may not occur with human activity that occurs intermittently or for only short periods in the year.

Airboats are likely to be especially disturbing due to their loud sound levels (100-110dBA at 50 ft.) and ability to travel off of the river channels and in wetlands (and the unpredictable nature of that travel). Personal watercraft use would be more disturbing than jet- or prop-powered boats because of the tendency of this use to be used in play and to travel side to side and up and down the water channel. Hovercraft would be similar in impact to jetboats, but would be able to better traverse shallow water areas and travel off of the river channel. In that way they are similar to airboats, but generally quieter.

Effects from Hazardous Materials and Abandoned Mine Lands

Cleanup of existing hazardous materials and prevention of new spills or deposits will benefit wildlife resources by reducing potential animal exposures and effects on habitats. Rehabilitation of abandoned mine lands will generally benefit wildlife, especially those that restore key habitats such as riparian areas.

Effects from Subsistence

The management of federal lands to maintain subsistence resources will benefit wildlife resources. . Subsistence harvest of wildlife is regulated and the harvest of vegetative materials for subsistence use is generally low and dispersed. Motorized vehicle use by federally qualified subsistence users could potentially impact wildlife in some alternatives and in some circumstances. Subsistence use of snowmachines (with a permit) during winter in RNAs would likely have generally minor direct impacts on wildlife, due to low levels of expected activity.

Effects from Special Designations

New ACECs were proposed in all action alternatives to protect wildlife (especially sheep and caribou) and fisheries values. ACEC management will reduce potential impacts to wildlife through closing or placing restrictions on locatable and leasable mineral development, restricting motorized vehicle use, and other provisions. In Alternatives C and E, cross country travel will not be allowed in ACECs, following Travel Management Planning. The Mosquito Flats ACEC will protect extensive sensitive wetland vegetation from disturbance by summer OHVs and will maintain moose calving and trumpeter swan and short-eared owl nesting habitat along with habitat for other wetland-dependent species.

All existing WSR classifications will be maintained in all alternatives. Management of these river corridors will tend to minimize surface disturbing activities. Designation of new segments under Alternative B will similarly serve to maintain wildlife habitat values in those segments.

4.3.1.12.2. Alternative A (No Action)

Effects from Wildlife

Although grazing of livestock is not currently allowed except in the Fortymile MFP, no restrictions on casual use of domestic animals, such as goats and llamas, as pack animals are in place anywhere in the planning area.

4.3.1.12.3. Alternative B

Effects from Wildlife

No use of domestic goats, sheep, llamas or similar animals would occur in Dall sheep habitat, reducing the risk to very low levels. However, use in adjacent areas could result in inadvertent contact because Dall sheep do use areas outside primary ranges (and can wander long distances) and escapes of domestic animals may occur.

4.3.1.12.4. Alternative C

Effects from Wildlife

No use of domestic goats, sheep, llamas or similar animals in Dall sheep habitat by operations requiring a permit from the BLM would be allowed. This would reduce risk of disease transmission from the No Action Alternative only slightly, because most use of domestic goats or llamas is likely to be by non-permit holders (such as the general public). Some Dall sheep in the Mount Prindle area have developed the habit of closely approaching recreationists to obtain urine-soaked soil and/or food. If use of pack goats was allowed, close contact between sheep and pack animals would be likely. Consequences of disease transmission could be major and have long-term impacts on Dall sheep populations.

4.3.1.12.5. Alternative D

Effects from Wildlife

Same as Alternative C.

4.3.1.12.6. Alternative E (Proposed RMP)

Effects from Wildlife

As in Alternative B, prohibiting domestic goats, sheep, and llamas would minimize risks of disease exposure.

4.3.1.12.7. Cumulative Effects

State Land Disposals

In some parts of the planning area, state lands adjacent to BLM lands are open to disposals, such as sales of recreational lots. Activities associated with these lands may affect wildlife resources on BLM lands, including road and trail development. Along the west side of the south unit of the Steese National Conservation Area, a large area of state land is designated for disposal. Several sales of recreational lots in this area have occurred. Some land owners in such an area near the southern boundary of the White Mountains NRA use BLM trails to access their parcels. Other state land sale areas are adjacent to portions of the Dennison and Mosquito forks of the Fortymile WSR Corridor. Settlement is currently not allowed in Region 1 of the Upper Yukon Area Plan, which includes a significant portion of the current Fortymile calving area.

Mineral Development

Development of minerals will occur on state and private lands in the planning area. Effects will be similar to those described for activities on BLM lands, except that the level of activity is expected to be much higher, as the state and private lands generally have higher mineral potential.

Large lode mines are not predicted to occur during the 20-year life of the plan on BLM lands, except for the Money Knob Mine, which involves only isolated federal mining claims. Additional lode mines on BLM lands could potentially occur, either within the life of the plan or later. One pre-feasibility exploration project is predicted for the Steese Unit, which could later be developed into a large mine. Large lode mines involve a large area of surface disturbance, permanent change to the landscape, high levels of human activity on-site and involved in transport, and typically require large, high-standard road access with considerable traffic. Access may be requested across BLM lands for mines located on non-BLM lands, resulting in direct and indirect impacts.

Opening an area to mineral entry and location may have long-term consequences because a mineral claim may be maintained indefinitely before being developed. In addition, patent of mining claims, in the unlikely even the current moratorium is lifted, could result in holdings of private land within public lands, resulting in long-term habitat loss and fragmentation, wildlife disturbance, and impacts associated with access.

Forest and Woodland Products

Commercial development of forest products will occur on state and private lands in the planning area, mostly in lower-elevation areas close to road access. Roads created for other purposes may be utilized for access to forest products. For example, the State of Alaska Upper Yukon Plan recognized the potential for forest product sales in the remote North Fork region, through possible access from the west. The Pogo Mine road, which has since been completed, extended the existing forest road east.

R.S. 2477 Rights-of-Way

Access to and across BLM lands, including motorized access, may be granted along R.S. 2477 rights-of-way. Currently, R.S. 2477s are not recognized by the BLM, but court decisions or negotiations with the State of Alaska could result in allowance of access along these routes and/or granting of rights-of-way. For example, the BLM recently granted a right-of-way along the Harrison Creek R.S. 2477 within the Steese National Conservation Area. Impacts of access would be similar to those described for motorized vehicle use on BLM lands for locatable minerals and recreation.

Aircraft activity

Other than as a condition of a permit for land use, the use of airspace is not controlled by BLM. Military aircraft utilize airspace over all of the planning area, and most BLM lands in the planning area (but not including the White Mountains subunit) are underneath Military Operations Area (MOA) airspace. MOA airspace is utilized both for routine flying and major exercises and in most of the MOAs aircraft are allowed to fly at 100 feet above ground level.

Military overflights have been related to lower caribou calf survival (Harrington and Veitch 1992). Davis et al. (1985) found no evidence of long-term population effects from frequent military and civilian aircraft activity to the Delta caribou herd. However, noise monitors and activity-sensing collars were used in the Delta Herd to document behavioral changes in caribou exposed to overflights, which included shorter resting bouts and increased daily movements (Murphy et al. 1993, Maier 1996, Maier et al. 1998). Most researchers studying the effects of aircraft overflights on caribou have suggested that female caribou with young calves are more sensitive to aircraft overflights than caribou of other sex and age categories and that mitigation is particularly important in the calving and postcalving seasons (Miller and Gunn 1979; Harrington and Veitch 1991; Murphy et al. 1993; Maier et al. 1998).

Magoun et al. (2003) observed reactions of Fortymile caribou to military aircraft overflights and concluded that short-term responses to overflights were generally mild in comparison to caribou reactions to predators or perceived predators. They also advised against assuming there are no long-term effects on calving caribou from jet overflights. Determining long-term effects would be difficult and they advised that “Without this information and with the potential for increased military jet training in the Yukon MOA, a conservative approach is advisable.”

Lawler et al. (2005) observed Dall sheep reactions to military overflights and noted few substantial reactions. During observation periods, however, few overflights occurred in close proximity to observed sheep. Dall sheep are likely to be more sensitive to disturbance in areas where they feel less secure, as indicated by the following observation made by BLM biologists: Sheep in the vicinity of Puzzle Gulch (an area with very limited escape terrain) reacted more strongly to passage of two military jet aircraft at a distance of approximately one mile from the sheep than any recorded reaction in the Lawler et al. (2005) study (Herriges, unpublished data, J. Lawler, pers. comm.).

Other studies of effects of military aircraft activity on neotropical passerine birds (Bartecchi 2003) and nesting peregrine falcons (Ambrose and Donaldson 2004) did not document major impacts at current levels of aircraft activity.

The amount of military aircraft use allowed in the MOAs (in the MOA EIS) is considerably higher than has occurred since their establishment and during any of the recent studies on effects to wildlife species. Impacts to wildlife in some areas could potentially occur at high levels of military aircraft activity. In recent years, the Air Force has voluntarily avoided scheduling Major Flying Exercises during caribou calving and has instituted mitigation measures (raised minimum altitudes near known concentrations of calving caribou) to reduce potential impacts to the herd. These measures have likely resulted in little impact to caribou from Major Flying Exercises, but greater impacts could occur in the future if aircraft activity increases to nearer the allowable limits or mitigation measures are not followed.

Other aircraft activity over BLM lands in the planning area includes commercial commuter aircraft. This activity normally occurs at high altitudes, but in some areas (where flight paths intersect high terrain) flights are at low level above ground. The highest amount of this activity likely occurs in the White Mountains NRA. To some extent, this activity may have acclimated

wildlife to at least some types of aircraft activity. Typically, commercial flights occur in one direction with no circling, and this nature may facilitate habituation. Aircraft flights along Beaver Creek can be numerous because it is used often during low cloud conditions to travel between Yukon Flats and Fairbanks.

Climate Change

Climate change will result in major ecosystem changes in the planning area, with corresponding effects on wildlife habitats and populations. Some species will benefit, others will be negatively affected. Significant changes to wildlife communities due to climate change have been predicted (Lawler et al. 2009). During the next 30 years, the expected impacts on individual eastern Interior Alaska wildlife species from predicted changes in climate are not all clear. The biggest change in the planning area, where wildland fire is a part of the ecosystem, will be due to a predicted increase in fire frequency (Rupp and Springsteen 2009b, Rupp et al. 2006). A shift from mature coniferous forest-dominated landscape to a younger deciduous forest and shrub-dominated landscape is predicted to occur as a result. The loss of older spruce forests (more than 80 years) is likely to be substantial. This predicted shift will be a major ecosystem-level change and may result in large shifts in wildlife species distribution and abundance. Between 1990 and 2050, the mean fire return interval for the entire planning area is predicted to change from 250 years to 100 years, and simulations show an increase in deciduous vegetation (forest and shrub) from 10.7 to 75.6 percent of landscape.

As a result of the shift in fire frequency and severity and vegetation composition, species dependent on early seral stage and deciduous communities will in general benefit from climate change; and those dependent on older seral and spruce communities will likely be negatively affected. New plant and animal species will expand their distribution into the planning area within the next 30 years, with unpredictable effects on resident wildlife species. Habitat change from spread of invasive plants could be large in at least some habitats.

Summers are predicted to receive more precipitation, but be relatively drier due to increased temperatures. Insect damage to trees and temperature-induced moisture stress on spruce trees could result in major declines in those species which, in addition to increased fire frequency, could result in relatively less spruce forest on the landscape. This would impact mature white spruce-dependent bird species such as Townsend's warblers. As permafrost has receded, ponds and small lakes have dried (Riordan et al. 2006) and this trend will likely continue, perhaps aided by the summer moisture deficit. Lower creek and river flows are also likely. These changes will negatively affect waterfowl, shorebirds and aquatic wildlife such as beaver and muskrats. Species with only arctic and subarctic or alpine distribution may be most likely to be negatively impacted by climate change, including species such as gyrfalcon and ptarmigan. Extreme weather events are predicted to increase in frequency and can have major impacts to wildlife populations.

Caribou—Climate change is predicted to dramatically change forests in Interior Alaska and a predicted increase in wildland fire occurrence and severity will drastically reduce old age spruce lichen stands and reduce traditional winter lichen forage (Rupp and Springsteen 2009b). Using moderate climate change scenarios, the decline in stands of spruce less than 80 years old is predicted to be roughly forty percent from 1990 to 2050 and the mean fire return interval will decline from 250 to 100 years. This will result in major reductions in available lichen forage. Currently, winter range is not considered to be limiting, so impacts of this reduction will depend on the population level of caribou and the extent of winter range available, including other herds that may be using the available winter range.

At a minimum, increased wildland fires will result in wider winter travel by caribou in search of available lichen forage. More frequent and severe wildland fires and the shift from coniferous to deciduous forest dominance will likely foster increased moose densities and, as a result, increased wolf densities, which would likely increase predation rates on caribou. Predicted increased summer temperatures and drier conditions will likely reduce condition and pregnancy rates of caribou. Harassment by insects may also increase with higher summer temperatures. Increased shrubs and decreased lichen may occur in alpine habitat and a slowly rising treeline may reduce extent and quality of summer and fall range. Increased incidence of rain-on-snow events could impede winter foraging. Expanded ranges of some parasites and increased abundance in the environment are expected to affect caribou. Although some aspects of climate change could be positive, such as earlier summer greenup of vegetation, in balance, the effects on caribou populations are more likely to be negative. Across the north, a majority of large caribou herds monitored are in decline and the synchronous nature of these trends and observed effects on some herds of extreme weather events implicates climate change as a primary cause (Vors et al. 2009), although other human influences such as development and harvest may also be involved.

Dall Sheep—It is difficult to predict the effects of climate change on Dall sheep habitats. In low-elevation sheep habitats where forest is found in close proximity to escape terrain, an increase in fire frequency may result in improvement in short-term creation of new foraging habitats and improvement in forage quality. In most areas of sheep habitat, an ongoing rise in treeline could reduce the extent of sheep habitat, but that rise is expected to be slow. An increase in shrubs in alpine tundra (as is occurring in arctic tundra) would reduce quality of Dall sheep habitat, especially in winter when they would hold snow. The main impact of climate change may come from a combination of a predicted increase in winter temperatures (which will result in increased incidence of winter rain/icing events) and an increase in winter precipitation. Earlier green-up and longer growing seasons may be beneficial, but drier soil conditions could reduce forage quality. Dall sheep rely on alpine slopes which are blown free of snow and on areas of shallow, uncompacted snow for access to forage in winter and populations are commonly thought to be regulated by winter weather. Heavy snow winters and/or instances of freezing rain or heavily crusted snow could have serious consequences for sheep populations, depending on the severity and frequency of those events. These consequences would likely outweigh positive effects of climate change and so the overall impact of climate change on Dall sheep is likely to be negative.

Moose—The large area burned since 2004 has likely already benefited moose and the predicted increase in fire frequency and resulting shift towards a more deciduous-dominated landscape will likely continue to benefit moose. Negative effects of climate change for moose include a predicted increase in winter precipitation, which may result in periodic excessively deep snow years, and increased summer temperatures which could result in some heat stress. Deep snow and heavy browsing were responsible for a crash of Tanana Flats moose populations in 1965–1966 (Gasaway et al. 1983). The overall effect of climate change on moose is uncertain, but a shift to early seral and deciduous vegetation will likely result in overall beneficial effects.

Potential Cumulative Effects to Caribou

Caribou are a very important species in the Planning area, both ecologically and culturally. Caribou are wide ranging and the Fortymile caribou herd ranges into all four subunits (though rarely in Upper Black River Subunit) and far into Canada as well. This large range with many landowners increases the potential for significant accumulation of effects. In addition to the BLM, major land managers in the Fortymile caribou herd range include State of Alaska, National Park Service (Yukon-Charley Rivers National Preserve), BLM, Doyon, Limited, and Government of

Yukon Territory. Only the NPS has a mission focused on resource preservation and it manages twenty-nine percent of lands in the core calving area. Doyon, Limited, is a corporation with a focus on resource development; and the BLM and State of Alaska have multiple use missions. The State of Alaska may also sell land. In the Fortymile subunit especially, many BLM lands have recently been, or will soon be, conveyed to Doyon, Limited, and other Native corporations and the State of Alaska. The State of Alaska and Native corporations are selecting lands with relatively high mineral potential (or other resource development potential), leaving what are currently thought to be mostly lower potential lands under BLM's management. As a result, resource development activities which may impact Fortymile caribou are likely to be concentrated on state and private lands in the area. Relative to these, activities on BLM lands are likely to represent smaller impacts to Fortymile caribou habitat. BLM lands, however, include some of the most highly used habitats for calving and postcalving. In the core calving area, thirty percent is within BLM lands, and that proportion is higher in the highest density calving areas. As other lands in calving/postcalving habitats are developed, BLM and NPS lands may become more important to Fortymile caribou. The main historical calving grounds of the Fortymile herd for much of the previous century occurred in the White Mountains NRA and north Steese National Conservation Area. Access to the historical calving grounds requires migration across a zone of state land along the Steese Highway mostly open to mineral entry and currently with extensive areas of mining claims.

Increased fragmentation of Fortymile caribou habitats is expected to occur from a variety of activities and the access created for them. Most of the highest density recent calving habitat for the Fortymile herd occurs south and east of Yukon-Charley Rivers National Preserve. Lands have been selected in those areas by Doyon, Limited, and the State of Alaska for conveyance. The Pogo Mine occurs just to the west of calving/postcalving range and a potential mine at Slate Creek (Goodpaster River tributary) occurs closer to that range. The Little White Man prospect, the site of a likely lode development, and other prospects in the vicinity occur to the east of Pogo. More than two townships of land centered upon Mount Harper have recently been conveyed to Doyon, Limited, presumably for their mineral potential, and this is the center of a very highly used calving concentration. Extension of a road east from Pogo towards Mount Harper was considered as a scenario for cumulative effects analysis in the Pogo Mine EIS. Filings of R.S. 2477 rights-of-way, although not recognized at this time by the BLM, indicate potential additional routes upon which access might someday be developed. Any exploration, mines and access (and additional development associated with and facilitated by that access), on BLM lands in the Fortymile calving/postcalving range could add to the cumulative impact of other development in the area. The Fortymile calving/postcalving habitats most likely to become unused or less used due to foreseeable future development are the historical calving grounds in the White Mountains/north Steese and one of the areas of highest current calving density in the Mount Harper/upper Middle Fork Fortymile River area .

Although predictions of new mining activity during the life of the plan are moderate (in part due to the length of time required to develop large mines), the opening of large areas of caribou habitat to locatable minerals could, in certain economic conditions, potentially result in extensive development within caribou habitat, including migratory habitats. Extensive areas of mining claims may be staked and maintained for many years and developed later.

The effects of climate change— combined with the effects of potential development on state land and private land of mining and exploration operations; military and other aircraft overflights; forestry and biomass harvest; state land disposals; recreational activities (including OHV use); and, transportation corridors associated with these and other activities— when combined with

that occurring on BLM lands may be substantial. It is not possible to predict these activities and changes accurately, but there is at least the possibility that they may combine to create substantial impacts on caribou.

In Alternative B, the contribution of BLM actions to cumulative impacts to caribou will be negligible. Most of the recent and historical calving and postcalving habitats on BLM lands are designated as ACECs. Alternative B provides the most protection to caribou calving/postcalving from potential impacts of mining and motorized vehicle use (of action alternatives) and restricts cross-country OHV use. Of the current most highly used (core) calving habitat of the Fortymile caribou herd, fifty-nine percent is closed to mineral entry (BLM and NPS lands).

In Alternative C, the contribution of BLM actions to cumulative impacts to caribou will be somewhat greater. Most of the recent and a portion of the historical Fortymile calving and postcalving habitats on BLM lands are designated as ACECs and are closed to mineral location and entry and leasing of minerals. OHV use will be limited to designated or existing routes in all SRMAs. However, a smaller portion of the current general calving range of the Fortymile herd is closed to mineral entry in Alternative C than Alternative B, but within the core calving area, the same fifty-nine percent is closed to mineral entry (BLM and NPS lands). The migration corridor in the vicinity of the Steese Highway is mostly open to locatable and leasable minerals.

In Alternative D, the contribution of BLM actions to cumulative impacts are potentially considerably greater. Almost all caribou calving/postcalving habitats on BLM lands in the Fortymile subunit are open to mineral location and entry and mineral leasing. Of the current Fortymile caribou core calving area, only twenty-nine percent is closed to mineral entry (all in Yukon-Charley Rivers National Preserve). Also in Alternative D, greater development of calving/postcalving and migration habitats in the Steese National Conservation Area and White Mountains NRA are allowed. More area is open to mineral location and entry and mineral leasing and areas open to motorized vehicle use. Cross-country use of small summer OHVs are allowed. In the White Mountains NRA and Steese National Conservation Area, other management objectives (such as RMZ designations) provide some protection to caribou habitats outside of ACECs. In this alternative, the impacts of potential mineral development in migration habitats in the Steese Highway area and in calving/postcalving habitats in the Fortymile, along with other cumulative impacts, could potentially become substantial.

In Alternative E, the contribution of BLM actions to cumulative impacts to caribou will be greater than Alternative B, but less than Alternative C. Larger portions of recent and historical Fortymile calving and postcalving habitats on BLM lands are closed to mineral location and entry and leasing of minerals. The main difference from Alternative C is that all of the Steese National Conservation Area is closed to mineral locatable and leasable minerals in Alternative E, including all BLM lands in and near the migration corridor in the vicinity of the Steese Highway. In Alternative E summer OHV use is allowed in all RMZs and cross-country summer OHV use is allowed in all subunits, but summer OHV use will be limited (through Travel Management planning) in the Fortymile ACEC and in crucial caribou and Dall sheep habitat. Other restrictions may also be implemented during Travel Management Planning.

4.3.2. Resource Uses

4.3.2.1. Forest and Woodland Products

Summary of Effects

Since no restrictions are proposed under any alternative for recreational use of timber or for personal use of forest products, there would be negligible effects to these activities under all alternatives. The area closed to personal use of timber would range from: zero acres in Alternatives A and E; 2.5 million acres in Alternative B; 300,000 acres in Alternative C; and 840 acres in Alternative D. Closures to commercial use of timber and forest products would be similar in that the largest areas are closed in Alternative B.

BLM lands would not be a significant source of timber. Other areas, in particular the Tanana Valley State Forest, offer much better opportunities for timber harvest. In areas that are open, measures to protect other resources, such as limits on the method, timing, and amount of harvest, would be required. Implementing closures to protect resource values would result in the loss of some available acreage and opportunities for harvest of timber and forest products. These restrictions and closures would have minimal impact on the Forestry Program, primarily due to low timber values and lack of access.

Special Designations would have the largest effect on the Forestry Program, but effects would still be small. The three WSR corridors provide some of the better opportunities to harvest the more valuable white spruce trees, particularly those portions of the Fortymile WSR where there is road access. Commercial timber harvest would be excluded from the WSR corridors and RNAs in all action alternatives. Restrictions on harvest would apply in ACECs. Loss of potential harvest areas in RNAs, ACECs and even WSRs would have a minimal effect, due to the remote and inaccessible nature and generally limited forest resources found in these areas. The strong emphasis on recreation within the White Mountains NRA, Steese National Conservation Area, and Fortymile WSR and the desire to protect visual resources would also likely lead to greater restrictions.

The following resources, resource uses, or programs would not affect Forest and Woodland Products and are not analyzed further: Air and Atmospheric Values, Cave and Karst Resources, Lands and Realty, Travel Management, and Vegetation Management, Withdrawals, Hazardous Materials, and Subsistence.

4.3.2.1.1. Effects Common to All Alternatives

Effects from Cultural and Paleontological Resources

Cultural and Paleontological resources would have minimal effects on Forestry. Minor restrictions on timber harvest could apply to avoid and minimize disturbing cultural and paleontological sites.

Effects from Fish and Aquatic Species

Measures to protect or restore healthy, functioning watersheds, riparian areas, and associated fish habitat would have minimal impact on the Forestry Program, primarily due to the low level of timber and forest product harvest anticipated. Implementing riparian buffers in Riparian Conservation Areas and reducing impacts to aquatic habitats in other areas would result in the loss of some available acreage and opportunities for harvesting timber. In areas that are open to

harvest, additional restrictions could apply; including limits on the method, timing, and amount of harvest.

Effects from Non-Native Invasive Species

Management to prevent invasion and spread of non-native species would have a minimal impact, primarily due to the low level of timber and forest product harvest anticipated. Additional restrictions on timber harvest could apply to prevent the introduction or spread of non-native species.

Effects from Soil and Water Resources

Protecting soil and water resources and reducing impacts to watersheds could indirectly result in some loss of available acreage and opportunities for harvesting forest products. Buffers or avoidance areas generally near streams, along with possible seasonal restrictions, could reduce potential harvest areas. Other areas not closed to timber harvest, may also require such restrictions, making harvest uneconomical and creating additional lost opportunity.

Effects from Special Status Species

Measures to protect and preserve Special Status Species would result in direct effects to all forest activities that impact these species. Under all alternatives, the harvest of timber and forest products in areas containing sensitive, threatened, or endangered species could be restricted, relocated, or excluded to avoid resource damage. The presence of Special Status Species in the planning area, however, is limited and impacts would be minimal.

Effects from Visual Resource Management

Protecting visual resources and reducing impacts to viewsheds could result in the loss of available acreage and opportunities for harvesting timber and forest products. Much of the potentially harvestable timber is within the WSR corridors or within economically accessible distances from roads. These areas would typically be managed for higher visual resource protection, resulting in harvest restrictions to reduce impacts to visual resources. Restrictions could include limits on the method, timing, location, and amount of harvest.

Effects from Wilderness Characteristics

Under Alternative A there would be no effect as areas to be maintained with wilderness characteristics since none have been identified. Under Alternatives B, C, D, and E various acreages of lands with wilderness characteristics to be maintained are identified. Though a considerable amount of acreage proposed as open to various forest harvest activities overlaps with areas where wilderness characteristics would be maintained, few impacts would occur. Areas where wilderness characteristics are to be maintained are generally remote and offer minimal harvest potential. Managing for wilderness characteristics could preclude timber harvest or restrict the method, timing, and amount of harvest.

Effects from Wildland Fire Ecology and Management

Opportunities may arise to combine fuel treatments and timber harvest to benefit local communities. Post-fire salvage could offer potential for harvest sites. Managing under a Limited Fire Management option could result in the loss of timber that might otherwise be available for harvest. These effects would be limited due to the lack of commercially valuable timber.

Effects from Wildlife

Protecting suitable habitat and reducing impacts to wildlife could result in the loss of some available acreage and opportunities for timber harvest. The method, timing, and amount of harvest could be restricted. Overall impacts would be limited based on the assumption that most restrictions to protect wildlife would be seasonal and that timber values are low.

Effects from Minerals Management

Development associated with minerals management could enhance access to otherwise uneconomical timber harvest areas. These sites are more likely to be in less sensitive areas and thus would be more conducive to timber harvest.

Effects from Renewable Energy

Criteria for biomass utilization according to *Assessing the Potential for Renewable Energy on Public Lands* (BLM and DOE 2003) are not met within the planning area. However significant and growing demand does exist for biomass utilization for personal and possibly small-scale community use. The plan allows for biomass projects in all alternatives, but only three to five small biomass projects are expected.

4.3.2.1.2. Alternative A (No Action)

Effects from Forest and Woodland Products

Under Alternative A 2.2 million acres would be closed to commercial timber sales and 1.2 million acres would be closed to commercial use of forest products in the White Mountains and Steese subunits. Personal use of timber and forest products could be allowed throughout the planning area. Although large areas are closed to these types of uses, effects would be minimal due to the low value of timber and lack of access to BLM lands.

Effects from Special Designations

Within the Beaver and Birch Creek WSR Corridors (156,000 acres), commercial timber harvest would be prohibited. Within the Fortymile WSR Corridor (248,000 acres), timber harvest could occur if consistent with managing for river values. Four RNAs (15,600 acres) are designated in the Steese National Conservation Area and White Mountains NRA. Commercial harvest of forest products would likely not be authorized within RNAs as it would not be consistent with the reasons for designation, and surface-disturbing activities are prohibited. Commercial use of timber would be prohibited in the Steese National Conservation Area and White Mountains NRA (inclusive of the RNAs).

The effect of these prohibitions or restrictions on the Forestry Program would be minimal due to the generally low value of the timber, lack of demand, and the inaccessibility of these areas.

4.3.2.1.3. Alternative B

Effects from Forest and Woodland Products

Under Alternative B, forest harvest activities would be much more restricted than in Alternative A. Approximately 4.8 million acres would be closed to commercial timber sales, and 2.5 million acres would be closed to commercial use of forest products, timber salvage sales, and personal

use of timber. Similar to Alternative A, the effects of these closures or restrictions would be small due to the low timber values and lack of access. Personal use of timber would not be allowed in the Steese National Conservation Area or the White Mountains NRA. This could have the effect precluding four or more applications for personal use firewood annually.

Effects from Recreation

Protecting designated recreation setting prescriptions and developed sites within designated SRMAs could result in the loss of some available acreage and opportunities for harvesting timber and other forest products. Effects would be minimal under Alternative B due to the fact that very limited forestry actions would be allowed to occur in SRMAs.

Effects from Special Designations

Under Alternative B, 2,811,000 acres in four areas would be designated as ACECs. The effect of these designations would be minimal, due to the fact that timber values are low and access to these areas is limited. Additionally, the Fortymile ACEC (690,000 acres) would be open to harvest of timber and forest products, consistent with protection of ACEC values.

The recommended designation of 98 miles of river under the National Wild and Scenic Rivers System could result in loss of opportunity for harvest of timber and forest products, including some areas that support the more valuable white spruce. These impacts would be minor due to generally low timber values, lack of access and lack of demand.

The Fortymile, Birch Creek, and Beaver Creek WSR Corridors (404,000 acres) would be closed to commercial use of timber and forest products. Although these areas support the more valuable white spruce, the effects of these closures would be minimal due to lack of access and demand. Additionally, any harvest authorized in the WSR corridor would have to be consistent with protecting the outstandingly remarkable river values.

4.3.2.1.4. Alternative C

Effects from Forest and Woodland Products

Under Alternative C, one million acres would be closed to commercial timber sales and 166,000 acres would be closed to commercial harvest of forest products. Personal use of timber would be prohibited on 300,000 acres. Effects on the Forestry Program would be minimal and less than under Alternatives A and B.

Effects from Recreation

Backcountry and Semi-Primitive RMZs overlap some areas where various types of timber and forest harvest would be allowed. No impact would be expected in these RMZs based on low timber values and lack of access. Areas where recreation could impact the Forestry Program include some Middlecountry and Frontcountry RMZs. These RMZs would have more developed recreational sites and place a higher value on protecting the visual setting for users. The location, method, timing, and amount of harvest could be restricted. Overall impacts would be low, based on current and anticipated future demand and low timber values.

Effects from Special Designations

The effects from RNAs would be the same as Alternative B.

Under Alternative C, 1,632,000 acres in three areas would be designated as ACECs. Similar to Alternative B, the effect of these designations would be minimal, due to the fact that timber values are low and access to these areas is limited. Additionally, the Fortymile and Steese ACECs (1,011,000 acres) would be open to harvest of timber and forest products, consistent with protection of ACEC values.

No additional rivers would be recommended for designation under the National Wild and Scenic Rivers System. Thus there would be no effects. Designated WSRs would be closed to commercial timber harvest. Commercial use of forest products would be allowed on the “scenic” and “recreational” segments of the Fortymile WSR, increasing the acreage open to these types of use compared to Alternative B. The effects of these prohibitions would be minimal due to the lack of valuable timber, limited access, and lack of demand.

Similar to Alternative B, the Fortymile, Birch Creek, and Beaver Creek WSR Corridors (404,000 acres) would be closed to commercial use of timber. The “scenic” and “recreational” segments of the Fortymile WSR would be open to personal use of timber. Although these areas support the more valuable white spruce, the effects of these closures would be minimal due to lack of access and demand. The effects of opening portions of the Fortymile WSR to personal use of timber would be that it would provide additional opportunities for this type of harvest on 103,000 acres. Compared to Alternative B, an additional 259,000 acres within WSR corridors would be open to commercial harvest of forest products, providing additional commercial harvest opportunities for forest products. Any harvest authorized in the WSR corridors would have to be consistent with protecting the outstandingly remarkable river values.

4.3.2.1.5. Alternative D

Effects from Forest and Woodland Products

Under Alternative D, 403,000 acres would be closed to commercial timber sales, 21,000 acres would be closed to commercial use of forest products, and 840 acres in the Fortymile Subunit would be closed to personal use of timber. Although this alternative opens large areas to various types of timber and forest product harvest, the effects would be minimal due to the low value of timber and lack of access on BLM lands.

Effects from Recreation

Same as Alternative C.

Effects from Special Designations

The effects from RNAs would be the same as Alternative B.

Under Alternative D, 1,368,000 acres in three areas would be designated as ACECs. The ACECs would be open to harvest of timber and forest products, consistent with protection of ACEC values. Similar to Alternative B, the effect of these designations would be minimal.

No additional rivers would be recommended for designation under the National Wild and Scenic Rivers System. Thus there would be no effects.

Designated WSRs (404,000 acres) would be closed to commercial timber harvest and open to commercial use of forest products. The entire Fortymile WSR would be open to commercial use of forest products, increasing the open acreage by 145,000 acres over Alternative C. Although this

alternative would open additional acreage, effects would essentially be the same as Alternative C, due to lack of access in the “wild” segments of the Fortymile WSR. Additionally, the Beaver Creek and Beaver Creek WSRs would be open to personal use of timber, providing opportunities for harvest on an additional 156,000 acres compared to Alternative C. Increasing the acres open personal of timber products would have minimal effect, as demand is expected to remain low and there are alternative harvest areas on state lands that are more accessible.

4.3.2.1.6. Alternative E (Proposed RMP)

Effects from Forest and Woodland Products

Under Alternative E, 1,967,000 acres would be closed to commercial timber sales. No areas would be closed for personal use of forest and timber products, commercial use of forest products, and commercial salvage of timber products. Although this alternative closes approximately 30 percent of the BLM-managed lands to commercial timber harvest, the entire planning area would be open to other forest and forest product uses and offers an increase in available personal wood and slash harvest. The effects would remain minimal as similar to previous alternatives due to lack of access to most lands and low timber values.

Effects from Recreation

Same as Alternative C.

Effects from Special Designations

Under Alternative E, 1,022,000 acres in three areas would be designated as ACECs. The ACECs would be open to harvest of timber and forest products, except commercial timber harvest. Similar to Alternative B, the effect of these designations would be minimal.

No additional rivers would be recommended for designation under the National Wild and Scenic Rivers System. Thus there would be no effects.

Designated WSRs (404,000 acres) would be closed to commercial timber harvest and open to commercial use of forest products. The entire Fortymile WSR would be open to commercial use of forest products, increasing the open acreage by 145,000 acres over Alternative C. Although this alternative would open additional acreage, effects would essentially be the same as Alternative C, due to lack of access in the “wild” segments of the Fortymile WSR. Additionally, the Beaver Creek and Beaver Creek WSRs would be open to personal use of timber, providing opportunities for harvest on an additional 156,000 acres compared to Alternative C. Increasing the acres open personal of timber products would have minimal effect, as demand is expected to remain low and there are alternative harvest areas on state lands that are more accessible.

4.3.2.1.7. Cumulative Effects

Warmer and drier conditions are expected over the life of the plan. The potential for increased frequency of wildland fire and stress to the forest ecosystems is expected. The possibility exists that increased interest may arise for salvage type harvest due to post fire availability and salvage of disease or pest infested trees. As for forest products such as berries and mushrooms, changes could be expected but are difficult to forecast. These effects would not vary by alternative.

The overall effect on the Forestry Program from planning decisions on BLM lands, in addition to restrictions in National Wildlife Refuges and National Preserves would result in additional loss of potential harvest areas. The demand for local harvest of timber, for home heating, saw logs and lumber, and biomass, is expected to increase. Higher fuel prices would lead to higher transportation and heating costs. Currently non-federal lands are able to meet this demand, with more accessible and feasibly recoverable timber. The cumulative effect to the Forestry Program would remain low, although activity is expected to increase slightly throughout the life of the plan. Cumulative effects would be the greatest in Alternatives A and B, somewhat less in Alternative C, and minimal in Alternative D and E.

4.3.2.2. Land and Realty Actions

Summary of Effects

The effects to the Lands and Realty program are limited and effects would be similar under most alternatives. The primary effect under all alternatives would be the potential for requiring relocation, redesign, or denial of realty authorizations to protect other resources. The largest effect would occur under Alternative B due to the designation of right-of-way avoidance areas.

4.3.2.2.1. Effects Common to All Alternatives

There would be no foreseeable effects on Lands and Realty from the following programs, resources, or resource uses and they are not analyzed further: Air and Atmospheric values, Cave and Karst, Non-Native Invasive Species, Soil Resources, Vegetation Management, Wilderness Characteristics, Fire Management, Forest and Woodland Products, Renewable Energy, Travel Management, Hazardous Materials, or Subsistence.

Effects from Cultural and Paleontological Resources

If important cultural or paleontological resources were found on public lands, the proposed action under a realty authorization may need to be relocated, redesigned, or denied. The presence of significant cultural or paleontological resources on public lands could prevent disposal of those lands through land tenure actions.

Effects from Fish and Wildlife, and Special Status Species

Proposed realty actions that would negatively impact the habitat of fish or wildlife species may need to be relocated, redesigned, or denied, depending on the level of effects. If critical habitat was designated for a listed species, it would become land tenure Zone 1 and would not be available for disposal actions.

Effects from Visual Resource Management

Management of visual resources would have minimal effects on most land and realty actions. VRM Class designations do not prohibit the issuance of authorizations, but would require modification of the proposed action to meet the visual resource management class objectives. Projects in VRM Class I and II areas would require more modifications than would projects in Class III and IV areas. In some cases, proposed projects could be denied in VRM Class I and II areas.

The only VRM Class I areas would be the “wild” segments of the Fortymile, Birch, and Beaver WSRs, and the RNAs in the Steese National Conservation Area and White Mountains NRA. The amount of VRM Class II lands would be limited under most alternatives and occur primarily in areas managed for a Semi-Primitive recreation setting or to maintain wilderness characteristics. VRM Class I designation could constrain or prevent some realty authorizations. This effect would be generally be limited in scope, because the status of these areas as WSR corridors and RNAs, their proposed management, and their generally remote locations, would limit the number and types of projects considered. Realty authorizations would be somewhat effected in VRM Class II areas, depending on the extent and permanence of any disturbance. VRM III and IV classifications would have minimal effects on lands and realty actions because projects can more easily be designed to meet the objectives for these classes. Under all VRM Classes, topography and other landscape features would often provide an opportunity to screen projects, further reducing the amount of modifications to the project itself.

VRM designations would have a limited effect because the number of realty authorizations likely to occur in Class I or II areas would be small. VRM Class I or II designation could have a large impact, in the event that an application for a project is denied because it cannot be redesigned or relocated to meet the VRM management objectives. In general, the potential for adverse impacts decreases from Alternative B to Alternative E to Alternative C to Alternative D because the acres under VRM Class I and II designation decreases.

Effects from Water Resources

If there are instances where proposed realty actions would have unacceptable impacts on the management of water resources or riparian habitat, the proposed action may need to be relocated, redesigned, or denied.

Effects of Minerals Management

There are few foreseeable effects on land tenure or land use authorizations from the use of fluid, solid, locatable, or salable mineral resources. If additional lands are made available for the staking of mining claims, there could be some increase in processing and granting of rights-of-way for access to mining claims. In most cases, however, access would be authorized as part of the Plan of Operations under the mining regulations.

Effects of Recreation

There are few foreseeable effects on land tenure or land use authorizations from Recreation Uses. For those lands that would be managed for Primitive or Semi-Primitive settings, all reasonable alternatives (including relocation, redesign, mitigation, or denial) would be explored to avoid issuing rights-of-way or other authorizations that would be inconsistent or incompatible with the recreation opportunity setting.

Effects of Withdrawals

There are few foreseeable effects on land tenure or land use authorizations from recommended adjustments to withdrawals. When some withdrawals are modified or revoked, more lands could become available for exchange and other means of disposal. In addition more lands would be available for mineral entry. As a result, there could be a small increase in processing and granting of rights-of-way.

4.3.2.2.2. Alternative A (No Action)

Effects of Special Designations

There are few foreseeable effects on land tenure or land use authorizations from special designations. For those lands under special designation, all reasonable alternatives (including relocation, redesign, mitigation, or denial) would be explored to avoid issuing rights-of-way or other authorizations that would be inconsistent or incompatible with the purpose and reason for which the lands were designated. Designated lands would be unavailable for disposal actions. Under Alternative A, these effects would be limited to 15,600 acres of designated RNAs in the Steese National Conservation Area and White Mountains NRA, and 404,000 acres in the Fortymile, Beaver Creek, and Birch Creek WSRs.

4.3.2.2.3. Alternative B

Effects of Special Designations

In addition to the effects discussed under Alternative A, all ACECs (2,811,000 acres) are designated as right-of-way avoidance areas. In the Steese, White Mountains, and Upper Black River subunits the effects of this would be limited. Few requests for rights-of-way are anticipated in the Salmon Fork ACEC due to its remote location. Few requests are also anticipated in the White Mountains and Steese ACECs as they are within congressionally designated areas that limit land uses. Rights-of-way within the White Mountains NRA for example would most likely be for BLM-managed trails or small site type rights-of-way such as remote weather stations.

In the Fortymile Subunit, the Fortymile ACEC entirely surrounds some Doyon, Limited and State lands and includes both State- and Native-selections. Resource development is an important aspect of both Doyon, Limited's and the State of Alaska's mission. Designation of this ACEC as a right-of-way avoidance area would likely make it more expensive and difficult for these entities to access their lands in the event of mineral exploration or development activities. This may also be the case in the Upper Black River Subunit where two parcels of Doyon, Limited lands are located between the Salmon Fork ACEC and the Yukon Flats and Arctic national wildlife refuges.

The effects under this alternative would be higher than under Alternatives C, D, or E as more acres are designated as ACECs and ACECs are right-of-way avoidance areas.

4.3.2.2.4. Alternative C

Effects of Special Designations

Only 1,632,000 acres would be designated as ACECs under this alternative and they would not be right-of-way avoidance areas. Effects on land and realty actions would be similar to those discussed under Alternative A. The effects under this alternative would be slightly less than under Alternative B, but greater than under Alternatives D and E.

4.3.2.2.5. Alternative D

Effects of Special Designations

Only 1,368,000 acres would be designated as ACECs under this alternative. Effects on land and realty actions would be similar to those discussed under Alternative A. The effects under this alternative would be slightly less than under Alternatives B and C because fewer acres are designated as ACECs.

4.3.2.2.6. Alternative E (Proposed RMP)

Effects of Special Designations

Effects would be similar to Alternative D, except 1,022,000 acres would be designated as ACECs. The effects under this alternative would be less than under Alternatives B, C, and D because fewer acres are designated.

4.3.2.3. Fluid Leasable Minerals

Summary of Effects

There would be no effects on geothermal and coalbed natural gas. Although decisions in Alternatives B, C, D, and E propose to close between 5,689,000 acres and 1,319,000 acres, to fluid mineral leasing, these closure decisions would have limited effect due to the lack of these resources on BLM-managed lands.

Effects to oil and gas would be limited due to the small amount of high potential resources on BLM-managed lands. Alternatives B, C, D, and E would open 834,000 to 5,204,000 acres to fluid mineral leasing subject to standard stipulations or minor constraints. Little interest in exploration and no interest in leasing is anticipated in any subunit under any alternative.

Alternative B would generate little interest in exploration or leasing, in part due to the extensive closed areas and leasing restrictions on open areas. Alternatives C and E would open some of the high occurrence potential lands in the Upper Black River and Steese subunits. Alternative D would open more of the high occurrence potential lands, including some lands in the White Mountains Subunit. Regardless of these openings, little interest in exploration or leasing would be anticipated, even under Alternatives C, D, and E. The unknown resource that underlies these lands would remain unattainable for the life of the plan.

4.3.2.3.1. Effects Common to All Alternatives

Fluid leasable minerals including geothermal, coalbed natural gas, and oil and gas have little development potential in the planning area. There is no development potential for geothermal or coalbed natural gas. The only hot springs on BLM-managed lands is Big Windy Hot Springs, which is designated as a Research Natural Area. Although Alternatives B, C, D, and E would open from 834,000 to 5,204,000 acres, to fluid mineral leasing these decisions would have no effect in relation to geothermal or coalbed natural gas.

There is limited potential for oil and gas in the Steese, Upper Black River, and White Mountains subunits. All three subunits contain areas of high occurrence oil and gas potential, based on conceptual USGS oil and gas plays (Map 87). BLM-managed lands lie on the margin of these plays and little development interest has been expressed in this part of the Yukon Flats Basin. Limited exploration has occurred in these subunits, particularly on BLM-managed lands. The oil

and gas resource in the Upper Black River Subunit is virtually unknown, as there has been little seismic work and only three test wells drilled.

Even if the resource existed in commercial quantities, exploration and development of the potential oil and gas resource would be further deterred by additional restrictions imposed through this plan such as SOPs and Leasing Stipulations (Appendix A). In all alternatives, there are areas with high oil and gas occurrence potential that conflict with environmentally sensitive surface values. Restrictions imposed to meet the goals of the RMP, would impact exploration and development by increasing the costs of these activities. The prospect for reduced profit would diminish interest and the potential leaseholder would look elsewhere. Interest in the Upper Black River Subunit would likely be negated by its remoteness and lack of infrastructure. Although Alternatives B, C, D, and E would open from 834,000 to 5,204,000 acres to fluid mineral leasing, these decisions would have limited effect in relation to oil and gas leasing.

4.3.2.3.2. Alternative A (No Action)

There are no active oil and gas leases in the planning area and leasing would not occur under Alternative A. The lack of NEPA analysis and the retention of ANCSA 17(d)(1) withdrawals would preclude leasing. As a result, exploration and development would not occur and those undiscovered fluid minerals resources would remain unavailable for development.

4.3.2.3.3. Alternative B

Under Alternative B, 800,000 acres in the Fortymile and 3,000 acres in the Steese subunits would be open to leasing, subject to the standard stipulations. The decision to open these areas would have no effect as there are no known high occurrence potential oil and gas lands in these areas.

Some lands in the Steese and Fortymile subunits would be open to fluid mineral leasing, subject to no surface occupancy (NSO). NSO lands would include split-estate lands (minimal acreage) and BLM lands near the village of Circle (31,000 acres). The NSO lands near the communities of Circle and Central contain high occurrence potential for fluid leasable minerals. NSO would not allow for any permanent facilities and given the size of the parcels near Circle, would likely make any potential oil and gas target uneconomical. Split-estate lands could be available through directional drilling, but adjacent lands would need be open to development for this to occur. Directional drilling is unlikely because it is a technique used in the oil and gas development process. It is very uncommon for exploration drilling due to the expense. Before a directional well was considered, resource potential would need to be discovered through seismic followed by confirmation drilling of a vertical well.

Further deterring oil and gas leasing and development are the SOPs, Leasing Stipulations, and other regulations. Additional restrictions tend to cause a reduction in lease interest and overall lease value. Encumbrances posed by the SOPs and Leasing Stipulations also increase operating costs, which would have an impact on exploration. Higher operating costs associated with drilling restrictions would result in fewer wells drilled, potentially delaying or preventing a discovery.

The remaining 5,689,000 acres (eighty-five percent of BLM lands in the planning area) would be closed to leasing (Maps 26, 32, and 39). Closed lands would include the Fortymile WSR, Fortymile ACEC, Fortymile SRMA, the Steese SRMA, the Upper Black River Subunit, and the White Mountains Subunit. These closures would have no impact in the Fortymile Subunit as there are no known high occurrence potential lands for oil and gas. Closed areas in the other subunits

include at least 300,000 acres of high occurrence potential lands. Any fluid mineral resource that may be present in these areas would be considered unavailable for the life of this plan.

4.3.2.3.4. Alternative C

Alternative C differs from Alternative B, as the Upper Black River Subunit and portions of the Fortymile caribou herd calving habitat in the Fortymile and Steese subunits would be available to leasing. Additionally, a portion of the Steese National Conservation Area would be open to leasing. Effects would be similar to Alternative B, but closures and restrictions would apply to fewer acres.

Under Alternative C, 2,804,000 acres in Fortymile, Steese, and Upper Black River Subunits would be open to leasing, subject to the standard stipulations (Maps 27, 35, and 40). Restrictive openings would include 462,000 acres open. In the Steese Subunit, openings would include approximately 100,000 acres of high occurrence potential lands. These decisions would have no effect in the Fortymile Subunit due to the lack of oil and gas resources. The minor constraints in the Steese and Upper Black River subunits would consist of seasonal restrictions in priority wildlife habitats and stream buffers in Riparian Conservation Areas. These could constrain the exploration and development phases by delaying a project, but would not have any effect on the production phase. These constraints would not impose a significant restriction for oil and gas exploration and production.

Approximately 3,257,000 acres (fifty percent of BLM lands in the planning area) would be closed to leasing. Closed lands would include the Fortymile WSR Corridor, portions of the Fortymile ACEC, Birch Creek WSR Corridor, portions of the Steese National Conservation Area, and the White Mountains Subunit. These closures would have no impact in the Fortymile Subunit as there are no known high occurrence potential lands for oil and gas. The closed areas in the Steese and White Mountains subunits encompass approximately 252,000 acres of high mineral occurrence potential lands that would be unavailable for exploration, development, and production of any oil and gas that may exist.

4.3.2.3.5. Alternative D

Alternative D makes the most lands available to fluid leasable minerals of any alternative (Maps 29, 36 and 42). The primary difference from Alternative C would be the opening of the Middlecountry RMZ in the White Mountains Subunit, the opening of additional acres in the Steese Subunit, and the opening of caribou calving habitat and the "scenic" segments of the Fortymile WSR in the Fortymile Subunit.

Under Alternative D, 3,091,000 acres in the Fortymile, Steese, and Upper Black River Subunits would be open to leasing, subject to standard stipulations, including 51,000 acres of high occurrence potential lands in the Steese Subunit. An additional 2,111,000 acres would be open, subject to minor constraints. Lands open to minor constraints would include 117,000 acres of high occurrence potential areas in the Steese Subunit and 25,000 acres of high occurrence potential areas along Victoria Creek, in the White Mountains Subunit.

The effects of these closures and seasonal restrictions would essentially be the same as described under Alternative B, but would apply to fewer acres. Minor constraints would be seasonal and could constrain the exploration and development phase in the sense of delaying a project, but would not have any effect on the production phase. Stream setbacks in Riparian Conservation

Areas would not impose a significant restriction for oil and gas exploration and production. The seasonal constraints in the White Mountains Subunit (May 15 through July 15) could economically impact development projects, such as constructing and maintaining a pipeline or road. However, this impact would be minor.

The remaining lands, 1,319,000 acres (twenty percent of BLM lands in the planning area) would be closed to fluid mineral leasing. Closed lands would include the “wild” and “recreational” segments of the Fortymile WSR, forty-six percent of the Steese Subunit, and fifty-six percent of the White Mountains Subunit. As in Alternatives B and C, these closures would have no impact in the Fortymile Subunit. The closed areas encompass some high occurrence potential lands in the Steese National Conservation Area (87,000 acres) and the White Mountains Subunit (105,000 acres) which would be considered unavailable for exploration, development, and production of any fluid leasable mineral resources that may exist.

4.3.2.3.6. Alternative E (Proposed RMP)

Alternative E would open 1,713,000 acres to leasing. It differs from Alternative B, in that twenty-three percent of the Upper Black River Subunit would be available to leasing as would small parts of the Steese Subunit. Between these two subunits, approximately 122,000 acres of high potential lands would be available, with roughly 30,000 of those acres on BLM unencumbered lands. Approximately, 32,000 acres are in the Steese with the remaining 90,000 acres in the Upper Black River. Effects would be similar to Alternative B for the Fortymile, White Mountains, and Steese Subunits. Effects in the Upper Black River Subunit would be similar to those in Alternative C where closures and restrictions would apply to fewer acres. Opening these lands to leasing would have little effect because so little high potential acreage is included and these high potential lands are on the periphery of the oil and gas basin. Although this alternative would open an additional 91,000 acres of high potential lands to leasing compared to Alternative B, industry interest would focus on numerous other areas that are closer to existing infrastructure and have higher development potential.

The remaining lands, 4,811,000 acres, would be closed to fluid mineral leasing. The closed area includes the Steese National Conservation Area, White Mountains NRA, wild and scenic rivers, high value watersheds, and ACECs.

4.3.2.3.7. Cumulative Effects

There would be no cumulative impacts in the Fortymile Subunit under any alternative, as fluid minerals are not known to exist in commercial quantity. While there are high occurrence potential lands for oil and gas within the Steese, Upper Black River, and White Mountains subunits, cumulative impacts would be minimal as this plan does not anticipate leasing. If future leasing were to occur, the cumulative impact to the resource would be the removal of natural gas or oil by producing wells on leases with the fewest restrictions and lowest operating costs. The production of natural gas and oil is a beneficial irretrievable commitment of the resource. Production of these resources in a specific reservoir would not affect natural gas or oil recovery from a separate reservoir.

Cumulative impacts to the oil and gas resource would be greatest under Alternatives C and D, if leasing were to occur. No leasing would occur in Alternative A. There would be no interest in leasing under Alternative B since most high occurrence potential lands would be closed.

Cumulative impacts under Alternative E would be less than Alternative C, but greater than Alternative B.

Restrictions on federal leases could impact the leasing and development of adjacent non-federal leasable minerals. If an exploration company could not put a block of leases together, because of restrictions on federal leasable minerals, the private or state minerals may not be leased or developed either. Leasing of federal minerals on the other hand, could encourage the leasing of private or state minerals. Fluid leasable minerals are not expected to be impacted by the extraction of other minerals over the life of the plan.

Decisions and restrictions on fluid mineral leasing proposed in this RMP, combined with restrictions on mineral leasing on other lands in the planning area, would have a minor incremental effect by limiting the timing and locations available for oil and gas development. The BLM high potential occurrence lands are on the periphery of the Yukon Flats Oil and Gas Basin. Most of the basin is located on private and federal lands in the Yukon Flats NWR (Map 87). Without exploration and discovery on these private and other federal lands, no interest would be expected on BLM lands.

The incremental effect would be the greatest under Alternative A, where all BLM lands (6,523,000 acres or twenty-one percent of all lands in the planning area), would be closed to fluid mineral leasing. Incremental effects would be lower under Alternatives B, C, and E, where 5,689,000 to 4,811,000 acres of BLM lands (eighteen and eleven percent of the total lands in the planning area) respectively, would be closed to fluid mineral leasing. Under Alternative D, the incremental effect would be the lowest with only 1,319,000 acres of BLM lands (four percent of the total lands in the planning area) closed to leasing and an even higher percentage of the high occurrence potential lands open.

4.3.2.4. Solid Leasable Minerals

Summary of Effects

Although decisions in Alternatives B, C, D, and E propose to open from 834,000 acres to 5,204,000 acres in the planning area to solid mineral leasing, these decisions would have no effect due to the lack of these resources on BLM-managed lands and a decision to defer coal leasing.

4.3.2.4.1. Effects Common to All Alternatives

All unleased BLM-managed lands (including selected lands) within the planning area, subject to leasing under 43 CFR 3400.2, would be open for coal exploration and non-energy leasable mineral prospecting (oil shale, potassium, sodium, phosphate, and gilsonite). Exploration of federal coal would be considered if an application were received. There are no known occurrences of non-energy leasables of commercial quantity on BLM lands, thus no exploration or development is anticipated.

Although decisions in Alternatives B, C, D, and E propose to open from 834,000 acres to 5,204,000 acres to non-energy solid mineral leasing, these decisions would have no effect due to the lack of these resources on BLM-managed lands.

There are known coal occurrences in the planning area (Map 87). The Eagle Field (Fortymile Subunit) at 392,500 acres is the largest. The Eagle Field does not contain high quality coal

(lignite to subbituminous C, 0.2 to 0.6 sulfur, and two to twenty percent ash) and it has an estimated recoverable resource of 10 million short tons. There is very little interest associated with coal occurrences in the Fortymile Subunit unless nearby infrastructure were present or demand increased. The town of Eagle is 15 miles southeast of the Eagle Field. The Circle and Steese Coal districts are within the Steese Subunit. The Circle District is almost entirely on state land near the town of Central. The Steese District is located in the Steese National Conservation Area and Yukon Flats NWR. Development potential for the Steese District is greatly limited by its remote location and small resource body. Neither of these coal districts are considered valuable to industry at this time.

In the unlikely event interest was shown in the Steese District or Eagle Field, the resource would be unavailable due to existing withdrawals under Alternative A and a decision to defer coal leasing under Alternatives B, C, D, and E. If a company expressed interest in coal leasing, the coal screening process would be completed. If the screening process found the lands appropriate for coal leasing, the RMP would need to be amended before leasing could occur, delaying any potential development. Unless infrastructure were improved, or the demand for coal increased to a point where a low quality resource was desirable, the coal resource would remain in the ground.

4.3.2.4.2. Cumulative Effects

There would be no cumulative impacts under any alternative as there are no likely coal or other non-energy deposits attractive to industry. If a solid mineral resource were developed on adjacent, non-BLM lands, interest in BLM lands could be rejuvenated. Exploration could be conducted on BLM-managed lands, but leasing would require a nomination of specific lands and a plan amendment.

4.3.2.5. Salable Minerals

Summary of Effects

There would be no effects under Alternative A. Effects would occur under Alternatives B, C, D, and E as some lands would be closed to salable minerals. The unavailability of salable minerals could make projects more logistically challenging or uneconomic. This effect would be minor as demand for salable minerals on BLM lands would be low or nonexistent due to the remote nature of the closed areas and the lack of infrastructure.

4.3.2.5.1. Effects Common to All Alternatives

A NEPA review would be required for all salable mineral extraction operations on BLM lands. "Section 106" [54 USC 306108] of the National Historic Preservation Act requires a cultural resource evaluation be conducted and resources located prior to allowing any surface disturbance. Reclamation would be required. Under interim management guidelines, mineral material sales and free-use permits would not be conducted on selected lands without written consent of the potential future land owner. Material sales and permits are not issued on un-certificated Native allotments. Monies collected from sales and permits on selected lands are put into escrow for the future land owner.

Demand for mineral materials are driven by development projects. If other decisions in the plan constrain construction of facilities, trails, or roads, there would be less need for salable minerals. In areas where sand and gravel is needed for development, but which are closed to salable

minerals, the sand and gravel would need to be brought in from another area, most likely at a higher cost. In some cases, this could make the project uneconomical.

4.3.2.5.2. Alternative A (No Action)

Development of mineral materials sites would not be constrained under Alternative A, except as restricted by interim management guidelines for selected lands. No unencumbered federal lands would be closed to mineral material sales and permits.

4.3.2.5.3. Alternative B

Under Alternative B, 3,772,000 acres (fifty-seven percent of the planning area) would be open to salable minerals. There would be no effects in these open areas.

Approximately 2,751,000 acres (forty-three percent of the planning area) would be closed to salable minerals. Closed areas would include the “wild” and “scenic” segments of the Fortymile WSR Corridor, the Steese SRMA, the Salmon Fork ACEC, and portions of the White Mountains NRA. The unavailability of salable minerals can make projects logistically challenging or uneconomic as companies would be forced to look elsewhere for a readily available product. If a need for sand or gravel were identified in a closed area, the resource would not be available from BLM lands. The effects of these closures would be minor as most of the closed areas are remote and would be managed to maintain a Primitive or Semi-Primitive recreation setting. Little demand for mineral materials would be anticipated in the closed areas.

4.3.2.5.4. Alternative C

Under Alternative C, 6,134,000 acres (ninety-four percent of the planning area) would be open to salable minerals. There would be no effect in these open areas.

Approximately 389,000 acres (six percent of the planning area) would be closed to salable minerals. Closed areas would include the “wild” and “scenic” segments of the Fortymile WSR Corridor, and the Birch Creek and Beaver Creek WSR Corridors. These closures would not pose an adverse affect to salable minerals as there are few developed trails within the WSR corridors and no demand for mineral materials would be anticipated. Some of the “scenic” segments of the Fortymile WSR are adjacent to the Taylor Highway. Closures in these areas could make highway maintenance projects more costly.

4.3.2.5.5. Alternative D

Under Alternative D, 6,387,000 acres (ninety-eight percent of the planning area) would be open to salable minerals. There would be no effects in these open areas.

The “wild” segments of the Fortymile WSR (145,000 acres) would be closed to salable minerals. This closure would not pose an adverse affect to salable minerals as this area is remote and no demand for mineral materials would be anticipated.

4.3.2.5.6. Alternative E (Proposed RMP)

Same as Alternative C.

4.3.2.5.7. Cumulative Effects

Decisions in this plan, combined with restrictions on salable minerals on state land would have a minor incremental effect by restricting the locations available for salable minerals. Approximately fifty-nine, twenty, and twenty-six percent of the Fortymile, Steese and White Mountains subunits, respectively, are state land. The state lands are open to salable minerals, and are adjacent to the Alaska Highway System and the TAPs, where the most demand for mineral materials is anticipated. Additionally, there are existing BLM material sites along the highways that would remain available under all alternatives. There would be no incremental impacts under Alternative A in any subunit as all BLM lands would be open to mineral material sales.

Under Alternative B, the incremental effect of closing 2,751,000 acres to salable minerals in the Fortymile, Steese and White Mountains subunits would be minimal. Closing 621,000 acres in the Upper Black River Subunit would have no incremental effect as there are no roads or other infrastructure within the subunit.

Under Alternatives C and E, the cumulative effect of closing 389,000 acres to salable minerals in the Fortymile, Steese, and White Mountains Subunit would be less than Alternative B. These closed areas represent only one percent of all lands within the planning area and six percent of BLM lands.

The cumulative effects would be even lower in Alternative D. Only 145,000 acres in the Fortymile Subunit would be closed. This closed area is remote from the highway system and represents only two percent of BLM lands and less than one percent of all lands in the planning area.

4.3.2.6. Recreation

Summary of Effects

Measures to protect natural resources would generally benefit recreation by enhancing scenic quality and opportunities for fish- and wildlife-related recreation. The protection and interpretation of cultural sites would provide beneficial experiences for those seeking historical and cultural appreciation opportunities. Negative effects may occur due to restrictions on trail, site, or facility development to avoid sensitive areas or to prevent resource degradation. These effects would not vary greatly by alternative or subunit.

4.3.2.6.1. Effects Common to All Alternatives

Effects from Air and Atmospheric Values

The effects of smoke, haze, or other air pollutants would result in immediate and direct effects to recreational activities that include scenic qualities as part of the experience. For all of the alternatives, emission-generating activity decisions will comply with federal and state air quality standards, and will be managed to consider the effects of smoke (from wildland fire and prescribed burns) to recreation and tourism. These decisions would have long-term, beneficial impacts on all recreational opportunities, as air quality would be protected to provide quality scenic experiences.

Effects from Cultural and Paleontological Resources

Under all alternatives, site-specific measures regarding cultural and paleontological resources would preserve and protect these resources and ensure that they are available for appropriate

uses by present and future recreation users. The protection and possible interpretation of these resources would provide beneficial experiences for those individuals seeking historical and cultural appreciation opportunities. Negative effects of cultural and paleontological resources involve the possible restriction of trail, site, and facility development in areas that conflict with existing cultural sites. Short-term impacts of excavation and long-term impacts from the possible destruction of cultural sites could further impact recreation users, through the removal of valuable appreciation opportunities.

Effects from Fish and Aquatic Species

Measures to protect and/or restore healthy, functioning watersheds, riparian areas, and aquatic habitats, would result in long-term, beneficial impacts to fisheries related recreation activities and experiences. For all alternatives, fish management decisions would strive to maintain or restore the quality of water and aquatic ecosystems, resulting in improved fisheries related recreation. Negative effects of fisheries management on recreation involve the possible restriction of trail, site, and facility development in Riparian Conservation Areas or Essential Fish Habitat.

Effects from Non-Native Invasive Species and Vegetative Communities

Proper vegetative management practices, combined with a preventative approach to the introduction and spread of non-native invasive species, would provide a productive wildlife habitat for recreational use. Under all of the alternatives, integrated pest management (IPM) practices would be used to control or eradicate non-native invasive species, to improve vegetative communities and improve or restore ecosystem health. These management decisions would also provide for long-term, beneficial impacts to all recreational users in areas where vegetative communities provide scenic view sheds that enhance the quality of recreational experiences. Negative effects of vegetation management on recreation involve the possible restriction or modification of trail, site, and facility development. Certain recreational areas or activities could be closed (seasonally or permanently) due to higher potentials of vegetative damage or susceptibility to invasion by non-native invasive species.

Effects from Soil and Water Resources

Under all alternatives, measures would be enacted to ensure that watersheds are in, or making significant progress toward, a properly functioning condition. Soils would be managed to reduce erosion and minimize impacts to soil profiles, while water would be managed to comply with State of Alaska water quality requirements. These management decisions could directly affect recreation management if restrictions are implemented to protect soils or water quality in areas that are used for activities such as OHV use, fishing, and boating. Other activities such as hiking and wildlife viewing would be indirectly affected as the health of watersheds improve.

Effects from Special Status Species

Measures to protect and preserve Special Status Species would result in immediate and direct effects to all recreational activities that impact these species. Under all alternatives, recreational uses in areas containing sensitive, threatened, or endangered species could be restricted, relocated, or excluded to avoid further resource damage. Impacts to recreation may be short-term or the life of the plan dependent on the management decision. Long-term benefits from management for Special Status Species include enhance recreational botany and wildlife viewing , thus increasing natural appeal.

Effects from Wildland Fire Ecology and Management

As an essential ecological process and natural agent of change, wildland fires promote vegetative and wildlife diversity that can result in long-term, direct effects to recreation opportunities. New vegetative growth and improved wildlife habitat can result in increased wildlife numbers that have beneficial impacts on wildlife viewing and hunting. Negative effects of wildland fire on recreation are typically short-term, and are directly related to the effects of fire on resources used in recreation, such as recreation facilities, and on recreational scenic quality until vegetation can re-grow and return to a more esthetic state.

Effects from Wildlife

Management of a naturally functioning ecosystem to support healthy populations of wildlife would directly and indirectly protect recreation resources. Healthy wildlife populations would benefit hunting, wildlife viewing, and trapping activities. Negative effects of wildlife on recreation may occur if restrictions are placed on trails and facility development in order to avoid conflicts with priority wildlife habitats.

Effects from Recreation

Under all alternatives, lands not identified as a Special Recreation Management Area (SRMA) would be managed to provide for custodial actions only, through minimal facilities, structures, and regulations, except when deemed necessary to address visitor health and safety, user conflicts, and resource protection issues. Together, these actions would directly affect recreation management by ensuring that land-and water-based recreation opportunities continue to exist throughout the planning area.

Effects from Hazardous Materials

Environmental remediation activities would enhance recreation resources directly and indirectly by removing contaminated and hazardous materials, resulting in a more natural landscape and safer environment. The size and scope of the impacts would depend on the size of the site and the techniques used for removal and remediation activities.

Effects from Subsistence

Proper subsistence management practices, combined with a proactive approach to the protection and maintenance of sufficient wildlife habitat, will provide for healthy populations of subsistence species (such as moose and caribou), sufficient to provide opportunity for recreational use while still meeting subsistence needs. Under all alternatives, measures that serve to minimize impacts to subsistence uses, users and/or resources, would provide long-term, direct benefits to fish and game related recreation activities. However, if subsistence resources become limited, recreational uses of fish and game may be reduced.

4.3.2.6.2. Cumulative Effects

Management actions described under the RMP will maintain the recreation spectrum for the planning area for the life of the plan. Outside factors not controlled by the plan may impact recreation common to all units.

An increase in population in Interior Alaska will likely cause use number to increase over the life the plan; however management for the Recreational Opportunity Spectrum and the use of

indicators should prevent negative impacts. Increases in tourism in Interior Alaska may also show an increase in use numbers although the same strategy as described above would be employed. Improved transportation corridors may enhance visitor access to recreation areas and facilities. Enhancements, developments or closing of other federal and state recreation areas will also impact use numbers. These changes cannot be predicted, but can be monitored.

Climate change would have an effect on recreation, but how and to what extent is unknown. Warmer and drier conditions are expected along with an increased potential for wildland fire, leading to a vegetative shift towards a greater deciduous dominance on the landscape (Rupp and Springsteen, 2009b). Warmer drier conditions could result in changes to the traditional seasonal uses of recreation users. Winter activity use periods may increase or decrease, as temperatures and precipitation fluctuate. Summer type activities may benefit with predicted drying trends producing better hiking and OHV opportunities. On the other hand, floating use may become more challenging if adequate precipitation and run-off does not occur.

4.3.2.7. Travel Management

Summary of Effects

Measures to protect natural and cultural resources (such as fish, wildlife, soils, water quality, cultural sites) may reduce opportunities for travel-related activities. Trails may be rerouted to avoid sensitive sites or emergency closures may be implemented. These decisions would result in negative impacts to travel opportunities by limiting the accessibility and availability of public lands and features, including roads, primitive roads, and trails. Activities that result in development of new access may increase opportunities for travel-related activities.

4.3.2.7.1. Effects Common to All Alternatives

Effects from Air and Atmospheric Values

Snowmobile use would most likely emit the most concentrated emissions output within the White Mountains NRA. Emissions would be concentrated mainly at the trailheads, and then would disperse. Studies in Yellowstone National Park found that use levels of up to 318 (Best Available Technology) snowmobiles per day and up to 78 snow coaches per day would only have negligible impacts on air quality and would allow for maintenance of air quality at acceptable levels (NPS 2009). Snowmobile use has not exceeded this level in any subunit and is unlikely to do so during the life of the plan under any of the alternatives. Current trends in automobile and OHV technology are towards reducing emissions. It is foreseeable that air quality issues would not impact travel management decisions.

Effects from Cultural and Paleontological Resources

Under all alternatives, site-specific measures regarding cultural and paleontological resources would affect transportation management if restrictions or emergency closures were implemented, to protect and preserve significant cultural resources. These site-avoidance decisions would result in long-term, negative impacts to travel opportunities by limiting the accessibility and availability of public lands and features, including roads, primitive roads, and trails. If it is determined that OHV use or trail construction could negatively impact cultural or paleontological resources, the use may be deemed inappropriate or trails may be relocated to avoid negative effects.

Effects from Fish and Aquatic Species

Measures to mitigate the impacts of development on the fishery resource are attached as stipulations to the authorizing documents. Special stipulations are placed on development activities in crucial habitat areas such as fish spawning and over wintering areas. All surface-disturbing activities are required to use the best available technology to reduce siltation and stream turbidity to an acceptable level for fish survival and reproduction. All surface-disturbing activities are required to minimize future erosion. Effects on travel from fish management might include rerouting trails to avoid crucial habitat areas or potential trail closures. Strict adherence to best management practices or avoidance of crucial habitat areas will minimize impacts to travel management.

Effects from Invasive Species

Vegetation and surface-disturbing changes would result from all the alternatives in this Draft RMP/EIS. These disturbances all increase the risk of propagation of exotic, invasive or noxious non-native plants, and more so in Alternatives A and D since cross-country travel would be allowed. In Alternatives B and C, use would be more controlled and spread of invasive species could be reduced because OHV use would be more restricted in acreage and miles. Effective implementation of management decisions for non-native invasive species would keep the risk from becoming greater than at present and help reduce risk in the future. If some areas become impacted, avoidance areas may have to be delineated to reduce the spread of invasive species and potentially some areas could be temporarily closed to OHV use until the impact is mitigated.

Effects from Soil Resources

Managing soil resources will affect travel management if the proliferation of user-created trails, that are unsustainable from a resource management perspective, continue to evolve in unsuitable locations throughout the planning area. Increased erosion and melting permafrost, due to surface-disturbing activities, would continue to occur in portions of the planning area, where summer-motorized travel is allowed. This could affect travel management if restrictions or emergency closures became necessary, to mitigate soil erosion or minimize effects on soil profiles.

Effects from Special Status Species

Travel can be impacted through specific limits on OHV use or trail development within areas that contain Special Status Species. Proposed or permitted uses such as trail construction or designation would be analyzed and measures enacted to minimize impacts to these species. If it is determined that OHV use or trail construction may negatively affect a Special Status Species, the use may be limited to seasons when the species is not present, or the type of use or trail relocated to areas where the species is unlikely to be encountered.

Effects from Vegetative Communities

Measures to protect and/or restore healthy functioning watersheds, riparian areas, and associated vegetative communities could directly affect travel management if routes or areas were restricted or closed, to protect sensitive resource species. Effects would be short- or long-term, depending on the duration of the restrictions or closures, and could result in an overall net decrease of acres available for OHV use.

Effects from Visual Resources

VRM generally benefits travel management by helping to maintain scenic character within an area designation. VRM decisions would have long-term, beneficial impacts on travel activities that include scenic qualities as part of the experience. Minor effects may result if restrictions are placed on travel or OHV use, in areas that possess increasing recreation demands.

Managing visual resources may impact the design and layout of transportation facilities depending on the VRM Class. Areas assigned VRM Class I allow very limited management activities. The level of change to the characteristic landscape should be very low and must not attract attention of a casual observer. This objective will allow for transportation facilities that do not attract attention.

VRM Class II objective is to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. This will allow for some transportation facilities development that do not attract attention.

VRM Class III objective is to partially retain the existing character of the landscape where the level of change to the characteristic landscape can be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. This will allow for some transportation facilities development that may attract attention.

VRM Class IV objective is to allow for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. This will allow for transportation facilities development that may dominate the landscape.

Effects from Water Resources

Managing watersheds to ensure that they are in, or making significant progress towards, a properly functioning physical condition could affect travel management if restrictions or emergency closures were enacted, to mitigate impacts on water resources. Routes that cross streams or contribute to non-point pollution, supporting the impairment of the hydrologic regime (such as ground water, streamflow, water quality, biologic integrity, or riparian connectivity), would be temporarily or permanently closed to the type of use causing the effect.

Effects from Wildland Fire Ecology and Management

Existing and future structures and facilities will be prioritized for protection. Construction of fire lines if not rehabilitated may create new trails that would be available for OHV users. Travel and OHV use would likely not be interrupted due to wildland fire management activities except on a short-term, temporary basis. In forested areas, falling trees may affect trail travel after a fire occurs. It is anticipated that there would be little impact to travel management and OHV from wildland fire management.

Effects from Salable Minerals

Disposal of sand, gravel, rock, and other salable minerals must be compatible with the management of the subunit as designated. It is most likely that gravel sales on BLM lands would occur for BLM projects such as trails and roads. Mineral material sales could help facilitate development or improvement of trails as a source of materials close to the project site. Material sales could increase the opportunities available for OHVs by constructing gravel pits and access roads.

Effects from Subsistence

Federally qualified subsistence users would continue to have reasonable access to subsistence resources on all public lands within the planning area. In areas with either yearlong or seasonal restrictions on OHV use, subsistence access could be allowed by permit. If the number of federally qualified subsistence users becomes too large in any given area, impacts from this use could result in trail or area closures and impacts other users.

4.3.2.7.2. Cumulative Effects

Management actions described under the RMP and subsequent Travel Management plans developed for each unit will maintain travel access. Improved transportation corridors in all alternatives on BLM-managed lands will lead to long-term increased use due to the size and scale of remote lands not managed by BLM by adjacent to the planning area.

Under Alternatives B–D, motorboat use will be permitted per ANILCA 1110(a) on all rivers including non-navigable “wild” segments of designated WSRs. The No Action Alternative does not allow use of motorboats on non-navigable “wild” segments with the exception of subsistence users. There is no baseline data for comparison of impacts; however an increase in use is expected would be expected with increased access. Alternative E lifts the prohibition of airboats and hovercraft on all river segments. This would represent a one-hundred percent increase of use types in “wild” segments of WSRs. Conflicts in non-motorized and motorized users could arise if a substantial number of motorized users increase. Improvements in road access or other boat launch locations on non BLM-managed lands may increase motorized users. There is one such launch planned in the Steese subunit, but no indications of other launches or improvements in the remaining subunits at this time.

Proposed language changes in the action alternatives from GVWR to curb weight for OHVs will reduce confusion for users and will be similar to the State of Alaska regulatory language for OHV use. This will increase compliance on trails and reduce impact of resources.

Outside factors may impact travel management. An increase in population in Interior Alaska will likely cause use number to increase over the life the plan; however management for the Recreational Opportunity Spectrum and the use of indicators should prevent negative impacts. Increases in tourism in Interior Alaska may also show an increase in use numbers although the same strategy as described above would be employed. Improved highway transportation corridors on non BLM-managed lands may enhance access and thus increase use pressure. Enhancements, developments or closing of other federal and state recreation areas will also impact use numbers. These changes cannot be predicted, but can be monitored. Most impacts are likely in Frontcountry and Middlecountry zones. Advancements in technology related to ATVs, UTVs, motorboats may increase ability to reach more remote lands; however the use of the Recreational Opportunity Spectrum and the size, scale and scope of the landscape will be limiting factors.

Climate change would have an effect on Travel Management, but how and to what extent is unknown. The trends of climate change show warmer temperatures, more wildland fire activity, change in vegetation from a boreal dominated forest to a deciduous dominated forest (Rupp and Springsteen, 2009b). Trends also predict more precipitation in the form of rain and snow, but generally drier conditions due to warmer temps and changes in vegetation. Travel management would have to adapt as conditions change. Some areas may become less suitable for trail routes

while other areas may become more suitable. Temperature change predictions over the next 20 years indicate a minimal increase, thus effects to Travel Management are expected to be negligible.

4.3.3. Research Natural Areas

Effects on existing ACECs (Research Natural Areas) from Forest and Woodland Products, Land Use Authorizations, Recreation and Travel Management (White Mountains and Steese Subunits): Existing Research Natural Areas (RNAs) are also described in 3.4.1.2 and Appendix C. Evaluation of ACEC Nominations.

The federal government established a system of RNAs in 1927. RNAs are tracts of federal land and water established and managed for the primary purpose of research and education (43 CFR 8223.0-1). RNAs were selected to contain examples of significant natural ecosystems, areas suitable for ecological study, and rare species of plants and animals (these were referred to in the selection process as “Type Needs”). Federal and state agencies have cooperated in Alaska since 1973 in selecting, documenting, and describing RNAs.

Four RNAs were designated in the planning area in 1986 (BLM 1986a and 1986b). The RNAs were designated to provide areas where natural ecosystems and processes are undisturbed so that they can be studied and understood, and to provide an undisturbed area for comparison with other areas so that effects of management and use can be assessed. The principle of maintaining reference conditions for scientific comparison is basic to the purposes of the system of RNAs.

Four RNAs currently exist in the planning area. Two occur wholly in the White Mountains NRA (Serpentine Slide and Limestone Jags RNAs), one occurs wholly in the Steese National Conservation Area (Big Windy Hot Springs RNA), and a fourth (Mount Prindle) is shared between the White Mountains NRA and National Conservation Area. Effects will be discussed here rather than individual subunits.

Type needs identified during RNA selection and establishment are:

Mount Prindle:

- Geologic features: solifluction lobes, glaciated and unglaciated landforms, debris torrent channels
- Wildlife habitat: wheatear nesting habitat, Dall sheep (escape terrain) and caribou, historic Fortymile caribou calving.
- Uncommon vascular plants: *Draba paysonii* and rare moss species

Serpentine Slide:

- Geologic features: serpentine soils, fault line features
- Plant communities:
- Wildlife: grizzly, beaver

Limestone Jags:

- Geologic features: caves, limestone exposures, cliffs, emergent cold springs, soils, underground stream, fossils, fault line features.
- Wildlife: Dall sheep, marmot, falcon nesting.
- Plant communities:

Big Windy Hot Springs:

- Geologic features: Hot Springs – An undisturbed spring issuing hot water and containing thermophytic (high temperature dependent) organisms such as green and red algae and cyanobacteria; possibly also silica cinters or travertine deposits. Cliffs.
- Wildlife: Dall sheep, and ungulate mineral lick.
- Plant communities: Upland white spruce, Floodplain white spruce, Birch dry upland dwarf shrub, Foliose lichen

During ACEC evaluations conducted for the Eastern Interior RMP, all RNAs were identified as having relevant and important scenic values as well as the type needs listed above (Appendix C).

Summary of Alternatives

Alternative A: Managed to maintain a Primitive recreation setting; closed to mineral location, mineral leasing and motorized vehicles. No surface-disturbing activities allowed except BLM-authorized research projects (and hiking trails in Steese National Conservation Area). Closed to camping. Primitive campsites and trail access may be developed outside the RNA. Personal use of timber and local (within the White Mountains NRA or Steese National Conservation Area) use of forest products are not specifically prohibited, but no commercial uses are allowed. (Harvest of forest products or ROW management not specifically addressed in RNA management).

Alternative B: Same as A except that subsistence use of snowmachines is allowed with a permit, the RNAs are right-of-way avoidance areas, and no personal use of timber is allowed, but personal use of forest products is allowed.

Alternative C: Same as B except primitive camping and development of primitive hiking trails would be allowed in the RNAs and commercial timber salvage sales would be considered. The RNAs are not right-of-way avoidance areas.

Alternative D: Same as C, except that personal use of timber and of forest products is allowed.

Alternative E: Same as D, except that winter snowmachine use (by all users) is allowed and commercial use of forest products would be considered.

In Alternative E the RNAs are managed to maintain a Primitive recreation setting; closed to mineral location and mineral leasing; the OHV designation is changed to “Limited” and winter OHV use is allowed; no surface-disturbing activities are allowed except BLM-authorized research projects and primitive hiking trails; primitive camping is allowed; RNAs are not right-of-way avoidance areas; personal use of timber and commercial timber salvage sales would be considered; personal use of forest products would be allowed and commercial use would be considered.

Effects:

This analysis will focus on management actions which have the potential to affect ongoing research or education or the potential for future research of undisturbed ecosystems and features. Although Type Needs were identified when RNAs were designated, research and education may focus on any of the natural features of these areas.

Summary of Effects

The alternatives generally describe management that will result in a spectrum of potential impacts to RNA values, with Alternative A allowing the least impact to RNA values, and Alternatives B through E allowing progressively greater impact to RNA values. In Alternative A, winter snowmobile use is prohibited, as are trail-building (in White Mountains NRA) and camping. Alternative E will allow the greatest impact to RNA values, primarily due to the potential impacts from winter snowmachine use (by all users). Trail building, camping, and harvest of timber and forest products would also affect RNA values. Those activities requiring a permit or NEPA analysis (trail building, harvest of timber and forest products) could be managed to control impacts to RNA values (through denial of proposed action, design features, or mitigating measures). Harvest of timber and forest products would be limited to those which did not create surface-disturbance.

4.3.3.1. All Alternatives

Effects from Forest and Woodland Products:

The alternatives vary in what forest products are allowed to be harvested for personal or commercial use. Alternatives A and B are most protective of the scientific and educational values of RNAs. Alternative A allows only personal use of timber and local use of forest products.

Timber harvest of any kind would generally be inconsistent with maintenance of the scientific and educational values of RNAs and the intent of RNAs to provide areas where natural ecosystems and processes are undisturbed. However, in the permitting process, uses which are inconsistent could be denied or impacts mitigated. Because all alternatives state that surface-disturbing activities would not be allowed, it is assumed that permits would not be issued for activities which would likely result in surface-disturbance. Use of forest products may also be inconsistent with research, depending on the type of material removed. Activities such as casual berry picking would generally not affect the value of the area for research, whereas commercial gathering might. The harvest of trees for commercial or personal use would impact the scenic value of the landscape by changing the vegetation values in line, form, color and texture.

Effects from Land Use Authorizations:

Only Alternative B designates the RNAs as right-of-way avoidance areas. Some rights-of-ways (such as roads or trails) can have significant impacts on RNA scientific and educational values, whereas others (such as communication sites) may have minor impacts. These potential impacts will be considered during the NEPA process and proposals could be modified or denied. Because all alternatives state that surface-disturbing activities would not be allowed, it is assumed that permits would not be issued for activities which would likely result in surface-disturbance and impact the natural ecosystems and process. The development of road, trails, or other linear rights-of-ways, as well as site rights-of-ways such as communication sites would impact the scenic value of the landscape by changing the vegetation, landform and structure characteristics of the existing RNAs.

4.3.3.2. Additional Effects under Alternatives C and D

Effects from Recreation and Travel Management:

Trail construction and camping: Development of primitive hiking trails and camping in Alternatives C and D will create surface disturbance and removal and/or trampling of vegetation. This could result in disturbance of ongoing research and/or the potential to make the area less suitable for future research. The amount of trail development and the level of human use will determine impacts. Location and amount of trails developed could be designed to reduce potential impacts, as could location of hardened campsites. However, locations and amount of public use are generally not controllable in an area open to public use. Constructed trails would increase visitation and use of RNAs and visitor impacts. Although many users would remain primarily on such trails (reducing off-trail impacts), overall levels of use off-trail would likely increase due to increased visitation and use. The development of trails and camping areas would impact the scenic value of the landscape by changing the vegetation, landform and structure characteristics of the existing RNAs.

Mount Prindle RNA is likely to experience the most trail construction and camping activity due to greater accessibility and attractions. Increased hiking and camping in the Mount Prindle area may result in disturbance of Dall sheep and caribou. Trails, camping, and off-trail hiking may impact rare plant species such as *Draba densifolia*, prevalent on granitic soils on ridges. Any activity which disturbs vegetation could potentially affect RNA values.

Trail development to and in the Big Windy Hot Springs RNA could have relatively greater impact due to the small size of the area and the fragility of geothermal features at the hot springs. Frequent camping at the hot springs may also damage geothermal features. Shallow pools at the hot springs have been excavated and deepened by visitors in the past to allow for bathing. The hot springs area is very small and could easily be affected by visitor use.

Primitive trails constructed in the Serpentine Slide and Limestone Jags would likely receive relatively little use due to remote locations and difficult access during summer.

Subsistence use of snowmachines by subsistence users who obtain a permit will increase impacts to RNA values in Alternatives B–D. Vegetation, soils, wildlife, and soils may be impacted by snowmachine use. Use of snowmachines can mechanically damage vegetation which is not covered by sufficient snow and modern snowmobiles are capable of pushing over and crushing shrubs or small trees. All RNAs contain steep terrain traversable by modern snowmobiles. Snowmobiles used in steep terrain typically have powerful engines and are outfitted with deep “paddle” tracks with lugs longer than 1.5 inches. Spinning of the track is common and largely unavoidable when traversing steep terrain. This can in seconds remove snow, damage or remove vegetation, and even excavate soil. Wind exposure in high/steep terrain will produce low snow levels in some areas, making impacts more likely even in mid-winter. Use of these areas by snowmachines could result in changes to the scenic values through changes in the vegetative landscape features of line, form, color and texture.

Compaction of snow can cause changes in vegetation, soils, and hydrology. Snow compaction increases heat flow through snow, leading to colder snow and soil temperatures, increases snow retention in spring, and changes snow pore space and crystal structure resulting in reduced water holding capacity of snow which reduces ability of snow to slow runoff and to moderate effects of thawing in spring (Fahey and Wardle 1998). The compaction and heat conduction result in glaciating on some slopes. Increased frost penetration and increased time for soils to thaw can affect soil microbiota, which can affect nutrient availability, which will affect vegetation growth. Effects on some vegetation/soil types can be very long-lasting. Jorgenson et al. (2010) documented severe effects of seismic survey traffic on Arctic tundra persisting two decades after

disturbance. These trails generally change scenic landscape characteristics in line, color and texture. There possibility that snowmachines can transport invasive plant seeds or reproductive parts into RNAs. Establishment would normally be unlikely except in burned areas or where soils have been exposed.

Primary impacts of snowmachine use would be direct and indirect damage to vegetation, potential direct damage to research projects (e.g., plot markers) and, in some situations, changes to soils. Level of impact will vary by levels of use. Impacts which may not be large from a landscape perspective could nevertheless radically impact individual research projects and could reduce suitability of each area for many types of research.

4.3.3.3. Alternative E

Allowance of winter snowmachine use by all users in Alternative E will result in this alternative having a higher potential negative impact than all other alternatives. The magnitude of the impacts (described above for Alternatives C and D) would be much higher in this alternative due to allowance of all snowmachine use. Recreational use is generally less utilitarian in nature than subsistence use. Recreating on snowmobiles would more likely involve multiple passes over extensive area, higher speeds, and “high-marking” in steep terrain. Where recreational snowmachine use is present, changes to vegetation and soils are likely. Changes to vegetation and soils will impact scenic values of structure and vegetation in line, form, color and texture. In addition, recreational snowmachine activity is more likely to disturb wildlife species. In response, Dall sheep may reduce use of areas distant from rocky escape terrain or in areas where escape terrain is not extensive (such as the Quartz Creek Tors portion of the Prindle RNA). Dall sheep use of the northern end of the Limestone Jags RNA may also be reduced, and travel to and from the mountainous terrain north of Windy Creek may be inhibited. Steep terrain at the Big Windy Hot Springs RNA would concentrate snowmobile use (and resulting impacts) of snowmobiles in the creek bottom and hot springs area. The development of motorized and hiking trails would impact the scenic value of the landscape by changing the vegetation, landform and structure characteristics of the existing RNAs.

4.3.4. Social and Economic Conditions

4.3.4.1. Economics

Summary of Effects

The economic effects from Forest Products, Leasable Minerals, Renewable Energy, Lands and Realty, and Recreation would be low. Recreation use is expected to grow slowly with increased population in the region. Economic effects would be low for all alternatives, but slightly higher in Alternative D than in Alternatives A, B, C, and E.

Non-market and Non-use values would be highest in Alternative A, as ANCSA 17(d)(1) withdrawals prevent most development. Under Alternatives B, C, D, and E, these values would decrease in proportion to acreage protected through recommended mineral withdrawal, Primitive or Semi-Primitive recreational settings, maintenance of wilderness characteristics or special designations.

The largest economic effect would be from fluid leasable (oil and gas) and locatable minerals. The effects of these programs are discussed under the subunit specific impact analyses later in this Chapter.

4.3.4.1.1. Effects Common to All Alternatives

The following resources, resource uses, and programs would have no economic effects and are not analyzed further: Air and Atmospheric Values, Cave and Karst Resources, Cultural and Paleontological Resources, Fish and Aquatic Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wildland Fire, Wildlife, Salable Minerals, and Hazmat.

Anticipated levels of BLM Resource Management

The BLM predicts that monitoring and oversight activities would increase in all subunits under the action alternatives. These increases would be similar for all subunits and all would be relatively small. There would be no increase in activities in any subunit under Alternative A. While there would be no economic effect resulting from Alternative A, effects under all other alternatives would be similar. There would be a small increase in spending in procurement of aircraft and other transportation. These increases would be expected to apply primarily to Fairbanks and Tok, where most air taxi services are based.

Effects from Forest and Woodland Products

Due to the inaccessibility and lack of valuable timber, a large commercial timber sale would be unlikely to occur during the life of the plan. The BLM may receive applications for small biomass projects. However, given the inaccessibility and distance of BLM lands from local communities, demand for these types of projects is expected to be low. Forest product sales would be small and the level similar to that which has occurred over the past 20 to 30 years. Authorized use of forest products in the planning area over the last 10 years has totaled three free-use permits and one small vegetative sale contract for the entire period. While there would be no economic effect resulting from forest products under the Alternative A, effects under all other alternatives would be similar and very low.

Effects from Leasable Minerals

No exploration or development for coal, coalbed natural gas, geothermal, or oil shale is anticipated on BLM lands during the life of the plan. A decision on leasing for coal is deferred. The only hot springs on BLM land is Big Windy Hot Springs, which is a RNA and is not located near a population center or infrastructure. There is no occurrence of oil shale on BLM lands and potential for other leasable minerals is very low.

Coal, geothermal, coal bed natural gas, and oil shale related activities would not occur and would not contribute to economic effects.

Effects from Renewable Energy

Considering such factors as the amount and intensity of sunlight, wind velocity, proximity to roads and electric transmission facilities, and population size, no applications would be received to permit commercial construction of solar or wind facilities on BLM-managed lands. The BLM

could construct small solar or wind facilities to support BLM administrative sites or campgrounds. The economic effect under all alternatives would be negligible.

Effects from Lands and Realty

There would be continued demand for rights-of-way and various types of leases and permits. The demand for these land use authorizations would fluctuate with the degree of economic growth and development occurring within the region, but would generally remain minimal. Based on applications over the past five years, it is anticipated that no more than 30 applications would be received annually. Economic effects, if any, would be analyzed in future site-specific NEPA analyses required for land use authorizations.

Non-Market and Non-use Values

Natural amenities and the quality of life are recognized as economic factors of some rural communities in the American West and elsewhere (Rudzitis and Johnson 2000). While these factors do not directly generate income as do mining, tourism charters, or logging, they do attract residents, recreational users and may attract new businesses. Open spaces, scenery, and protected lands are important to residents and recreational users in the west for example. These values are thought to contribute to healthy economies and lifestyles (Rasker et al. 2004). The relationships are difficult to qualify, as it is difficult to assess or quantify effects of management on economic activities. Non-market values have been best quantified for subsistence activities in Alaska (Colt 2001).

Non-use values represent the value assigned to a resource by individuals, independent of the use of the resource. These represent the value that individuals obtain from knowing that the resource exists and will be available to future generations. Wilderness has been the subject of numerous non-use studies, and willingness-to-pay estimates for protection or designation identified a range of values (Krieger 2001, Loomis and Richardson 2001).

Non-market and non-use values would be preserved through a variety of RMP decisions, several of which may apply to the same piece of ground. Decisions that would generally help preserve non-market and non-use values include recommended withdrawal from locatable mineral entry, closure or no surface occupancy for leasable minerals, special designations, maintenance of wilderness characteristics, Primitive or Semi-Primitive recreational settings, and visual resource management. Non-market and non-use values would increase in proportion to acreage protected under each alternative.

4.3.4.1.2. Alternative A

Effects from Recreation

Under Alternative A, commercial outfitting or guiding permits issued by the BLM are relatively low in all subunits. Recreation use is expected to grow slowly with increased population in the region. Economic effects would be correspondingly low. Effects would be somewhat higher in the White Mountains subunit compared to other subunits, due to its proximity to Fairbanks and the focus on recreation oriented activities in the White Mountains NRA.

Non-Market and Non-Use Values

Non-market and non-use values would be the highest in Alternative A, as ANCSA 17(d)(1) withdrawals prevent development on more than six million acres. Existing special designations including the Steese National Conservation Area, White Mountains NRA, RNAs, and three Wild and Scenic Rivers would also help preserve non-market and non-use values.

4.3.4.1.3. Alternative B

Effects from Recreation

Same as Alternative A.

Non-Market and Non-Use Values

Non-market and non-use values would be somewhat lower in Alternative B than under Alternative A, as 834,000 acres would be opened to mineral location and solid mineral leasing in the Fortymile and Steese subunits. New locatable mineral activity is likely in these subunits and non-market and non-use values would be affected. However, seventy-six percent of the planning area would remain closed to mining activity, 2,813,000 acres would be designated as ACECs, and wilderness characteristics would be maintained on 5,059,000 acres. Five rivers would be recommended suitable for designation under the Wild and Scenic Rivers Act. All existing special designations would be retained.

Non-market and non-use values in the Upper Black River Subunit could be enhanced under this alternative due to the designation of the Salmon Fork ACEC and recommendation of the Salmon Fork as suitable for designation as a Wild and Scenic River.

Non-market and non-use values in the White Mountains Subunit would essentially remain the same as Alternative A.

4.3.4.1.4. Alternative C

Effects from Recreation

Same as Alternative A.

Non-Market and Non-Use Values

Non-market and non-use values would be lower in Alternative C than under Alternative B, as 3,887,000 acres would be opened to mineral location and solid mineral leasing in the Fortymile, Steese, and Upper Black River subunits. New locatable mineral activity is likely in the Fortymile and Steese subunits and non-market and non-use values would be affected. Only 2,051,000 acres would be designated as ACECs, and wilderness characteristics would be maintained on thirty-one percent of the land. No new rivers would be recommended as suitable for designation under the Wild and Scenic Rivers Act. However, all existing special designations would be retained.

Although, the Upper Black River Subunit would be opened to locatable minerals, no mining activity is anticipated due to the lack of mineral potential. If exploration or development did occur, it would likely only affect small areas within the subunit. Thus non-market and non-use values would generally remain on most of the subunit.

Non-market and non-use values in the White Mountains Subunit would be the same as Alternative B.

4.3.4.1.5. Alternative D

Effects from Recreation

Commercial outfitting or guiding permits issued by the BLM would increase slightly over Alternatives A, B, and C. Possible economic effects would include additional seasonal jobs, increased air charter service use, and income from guiding and outfitting for recreational users. These effects would be low.

Non-Market and Non-use Values

Non-market and Non-use values would be lower in Alternative D than under Alternative C as 4,755,000 acres would be opened mineral location and solid mineral leasing in the Fortymile, Steese, and Upper Black River subunits. Additionally, 5,204,000 acres would be opened to mineral leasing in all four subunits. Only 1,551,000 acres would be designated as ACECs and wilderness characteristics would be maintained on eleven percent of the land. All existing special designations would be retained.

Although, all of the Upper Black River Subunit would be opened to locatable minerals, no mining activity is anticipated due to the lack of mineral potential. If exploration or development did occur, it would likely only affect small areas within the subunit. Thus non-market and non-use values would generally remain on most of the subunit.

Non-market and non-use values in the White Mountains Subunit could be lower than in Alternatives B, C, or E. Approximately 451,000 acres in the White Mountains NRA would be available for solid mineral leasing. No exploration or leasing is anticipated during the life of the plan, but if it occurred, non-use and non-market values would be reduced in the vicinity of the activity.

4.3.4.1.6. Alternative E (Proposed RMP)

Effects from Recreation

Same as Alternative B.

Non-Market and Non-use Values

These values would be higher under this alternative than under Alternatives C and D, but lower than under Alternative B.

Non-market and Non-use values would be lower in Alternative E than under Alternative B as 2,412,000 acres would be opened mineral location and solid mineral leasing in the Fortymile, Steese, and Upper Black River subunits. Additionally, 2,412,000 acres would be opened to fluid mineral leasing in all four subunits. Only 1,022,000 acres would be designated as ACECs and wilderness characteristics would be maintained on 53 percent of BLM lands. All existing special designations would be retained.

Although, 53 percent of the Upper Black River Subunit would be opened to locatable minerals, no mining activity is anticipated due to the lack of mineral potential and limited access. If exploration or development did occur, it would likely only affect small areas within the subunit. Thus non-market and non-use values would generally remain on most of the subunit.

4.3.4.1.7. Cumulative Effects

Alternative A

Cumulative Effects to economics would be low if current management is continued under Alternative A. The ANCSA 17(d)(1) withdrawals prohibiting mineral development would remain in place, allowing for very little new economic activity in the planning area. Current regional employment and income from mining would continue to provide economic benefits for residents in the planning area. Currently, less than two percent of statewide and non-resident mining employment results from activities on BLM-administered mining claims.

Recreation activities are expected grow with population, and jobs could be created. Under Alternative A, no new guiding would result.

Current Regional Employment and Income from Mining

Pogo Mine, located near Delta Junction, and Fort Knox Mine, north of Fairbanks, are the largest gold producers in Alaska. Fort Knox (Fairbanks Gold Mining Inc.) employs 400-425 people at the mine and mill, operating on two shifts, 24 hours per day, 365 days per year. In 2010, the Pogo Mine workforce was approximately 300 employees (Szumigala et al. 2011). These mines are expected to continue operation during the life of the RMP.

Mining companies are the largest taxpayers in Fairbanks North Star Borough. Fort Knox paid \$2.8 million in property taxes to the Fairbanks North Star Borough in 2008. Payment in lieu of taxes or similar payments to communities provide additional economic benefits. The city of Delta Junction received \$500,000 from Pogo in 2008.

New Projects

Oil and gas projects in the planning stage or affecting the region include pipelines and oil and gas production. A natural gas pipeline carrying product from the North Slope has been under consideration since the 1970s. Doyon, Limited, is currently considering exploration of oil and gas resources on Native owned land in the Yukon Flats basin northeast of Fairbanks. Gold mining activity north of Fairbanks may increase with development of prospects near Livengood, owned by International Tower Hill Mines, Ltd. True North Mine, owned by the Fairbanks Mining Company, is another prospective mine within 25 miles of Fairbanks. Any of these projects would contribute to economic benefits in the region, particularly in the Fairbanks area. These projects involve private land within the planning area.

Alternatives B, C, D, and E

Cumulative Effects to economics are similar for Alternatives B, C, D, and E. Although the net effect would differ slightly between alternatives, the marginal addition to employment and income would be similar.

Recreation activities are expected grow with population, and new jobs could result from additional guiding activities. These effects would vary slightly between subunits. However, the total effect to economics would be marginal and low.

Oil and gas potential exists in three subunits and is assumed to result in exploration only in the Upper Black River and Steese subunits. Exploration would have economic consequences additive to the current condition. However, as discussed in section 4.5.4.1 Effects Specific to the Steese

Subunit, effects to employment and income would be very low. This is due to the limited effort predicted on BLM-managed lands (e.g., only 20 miles of seismic lines). Seismic exploration on BLM-managed lands in either subunit, would likely only result if Doyon, Limited, conducted exploration on private lands in the Yukon Flats basin. The primary economic effects would result from Doyon, Limited, exploration and it would be difficult to isolate jobs and income resulting from the extension of exploration activities onto BLM-managed lands. Due to low level of exploration anticipated on BLM-managed lands, the additive economic affects would be marginal and very low.

The State of Alaska attributes 4,366 direct jobs, and 4,700 total direct and indirect jobs to all mining in the state of Alaska (Athey 2013). Cumulative effects resulting from mining on BLM-managed lands in any subunit would result from placer type mining at scales far smaller than existing mining or proposed projects in the region. Table 4.12, "Employment and Income Under Action Alternatives" shows resulting employment in new gold mining. The cumulative effect to mining industry employment would be less than two percent for any alternative. The Alaska Division of Geological and Geophysical Services (DGGs) reports 282 placer gold mining jobs in the state (Szumigala et al. 2009).

4.3.4.2. Environmental Justice

Summary of Effects

This section discusses programs, activities, and resources that will be little affected by planning decisions. In these cases, effects on environmental justice populations are negligible.

The following programs would have no economic effects and are not analyzed any further: Air, Cave and Karst Resources, Cultural and Paleontological Resources, Fish and Aquatic Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wildland Fire Ecology and Management, Wildlife, Salable Minerals, and Hazmat.

4.3.4.2.1. Effects Common to All Alternatives

In twelve communities within the planning area, minorities make up forty-seven (Tetlin) to one-hundred percent (Birch Creek) of the population...primarily Alaska Natives. Minority populations are highest in the Black River and Fortymile subunits. These communities have significantly subsistence oriented economies characterized by high unemployment, low labor force participation, and relatively low income, and where energy and retail goods are expensive. Activities restricting subsistence practices, access, and resources may affect a segment of the local population.

Activities likely to occur in the planning area, other than those associated with mineral extraction or oil and gas, would primarily be transitory in nature, of short duration, and highly localized. Under all alternatives, the effects of recreation and forestry would be similar. Activities could temporarily divert, deflect, or disturb subsistence species from their normal patterns. These activities could alter the availability of subsistence species in traditional harvest areas, which could in turn affect harvest patterns by requiring hunters to travel further in pursuit of resources. Increased travel distances would result in greater expenditures for fuel and equipment, and increased wear and tear on equipment. There could be an effect on the subsistence hunting activities of local minority populations as a result of these activities. The effects would likely be minor, short-term, and highly localized.

Effects to subsistence and wildlife are addressed in greater detail in sections 4.3.3.4, and 4.3.1.12.

4.3.4.2.2. Cumulative Effects

Cumulative Effects to environmental justice populations from BLM decisions would be low if current management is continued under the No Action Alternative (Alternative A). Effects of additional recreation resulting from population growth would be low.

Withdrawals prohibiting mineral development would remain in place allowing for very little new economic activity. Current regional employment and income from mining would continue to provide economic benefits for residents in the planning area. For more detail, see section 4.4.4.1 Economics, analyzing current regional employment and income from mining, for description of existing mines and possible new developments on private land.

Cumulative Effects to environmental justice populations are similar under Alternatives B, C, D, and E. Recreation activities are expected grow with population, and new jobs could result from additional guiding activities as described in section 4.3.3.1 Economics. These effects would vary slightly under the alternatives in each subunit. However, the total effect to would be low.

Exploration for oil and gas could occur on lands in the Upper Black River and Steese subunits. Exploration would have economic consequences additive to the current condition. However, effects to employment and income would be very low due to the limited exploration predicted on BLM-managed lands (e.g., 20 miles of seismic line). It is likely exploration on BLM-managed lands in either subunit would only result from expansion of exploration in the Yukon Flats basin by Doyon, Limited. The primary economic effects would result from Doyon, Limited, exploration, so it is difficult to isolate jobs and income resulting from activities on BLM-managed lands. Due to low level of effort on BLM-managed lands the additive environmental justice affects would be very low.

Cumulative effects resulting from mining on BLM-managed lands in any subunit would result from placer mining at scales far smaller than existing mining or proposed projects in the region. Table 4.12, "Employment and Income Under Action Alternatives" shows resulting employment due to new gold mining. Previous studies indicate changes in basic employment actually result in some opposite changes in employment in other sectors of the local economy, as individuals move from job to job within a community (Robertson 2003). It is possible that new employment for workers in small eastern Alaska communities would result. However, economic inputs multiplied would continue to register higher effects on a regional and statewide level.

4.3.4.3. Social Conditions

Many human impacts cannot easily be measured in economic terms, and are considered as social impacts. These include detractions from existing lifestyles, sense of place, community values, and beliefs. In some cases, social impacts are described in terms of effects to social well-being or quality of life. These terms include many aspects of individual or community life, such as amount and quality of available resources, from basic needs like food and water to recreation and creative opportunities. Beliefs that could affect well-being include the sense of personal control over decisions affecting one's future, or the confidence that the government strives to act in ways that consider all stakeholders' needs.

Additional factors include the availability of public services such as schools, perceptions of public safety, and transportation constraints. Less tangible factors may include sense of place, community character, community values, and sense of community. Sense of place addresses the connection to an aspect or aspects of the landscape of the area. Community character is something that makes one community distinctive from others. Community values suggest shared values, shared experiences, or other homogeneous characteristics. Sense of community incorporates many, if not all, of the less tangible factors. For small towns and villages in the area, local schools provide a social focus and lend to the sense of community.

The social analysis included groupings that have been identified as most likely to be affected by this plan. These social groups are defined to facilitate the discussion of social impacts. The grouping action greatly simplifies members' beliefs and values, and does not address commonalities. In other words, individuals may identify with several groups. For this area, many individuals participate in or benefit from subsistence activities, whether they are Alaskan Native, miners, recreational users, or any other designation. As such, management actions that may benefit an individual in one aspect may have a negative impact to another aspect of his activities or well-being.

Summary of Effects

Impacts to social conditions will result from a wide range of management decisions. Most impacts result in positive benefits to some individuals and groups, with negative impacts to others. For example, restrictions on OHV use may limit the range of federally qualified subsistence users and reduce use of an area by OHV recreational users, but expand opportunities for non-motorized recreation. Most impacts to individuals and groups are minor to moderate in part because other opportunities exist for the activities within the planning area and on nearby lands managed by the State of Alaska or a Native corporation. While it is possible for impacts for multiple resources to adversely affect individuals and groups in a cascading fashion, most individuals and communities exhibit sufficient resiliency to adapt. The only community where local concern was expressed about community viability before consideration of impacts was Central, and it was relayed that since the Circle Hot Springs resort closed, the town has been in decline, and the school is one pupil from closing. The potential lack of this key component of social web is an indicator of impaired resiliency, and the community may have greater difficulty adapting to some impacts.

4.3.4.3.1. Effects Common to All Alternatives for all Subunits

Effects from Air and Atmosphere

Smoke from wildland fire increases with the number and duration of fires in the area. Some effects on humans are noted elsewhere (See Air and Atmosphere, Recreation) – primarily short-term health risks with some decrease in tourism and recreation activities. Socially, communities with frequent or long-term fire smoke issues have a decreased sense of well-being, and sometimes feel a reduced sense of community as individuals deal with the physical stress.

Effects from Cultural Resources

Accomplishing the research and awareness program goals will strengthen connections with the past and the land among some residents. If preservation activities preclude locally valuable economic or social activities, some members of the community may have a reduced quality of life.

Effects from Fish and Aquatic Species

Efforts to maintain or improve fish habitats have mixed impacts in the local communities. Abundant subsistence species provide for physical well-being and a sense of food security, particularly when other subsistence resources are in short supply or out of season. Access to gravel, placer, and other mining activities provide the infrastructure and economic opportunities that allow some residents to remain in the area, and give some communities their character. Communities relying on placer mining (Chicken and Central, in particular) are less viable with reduced mining activity unless some other economic activity replaces mining. In both communities, mining opportunities also exist on state land.

Effects from Non-Native Invasive Species

Impacts cannot be evaluated until step-down plans, with changes to SOPs and leasing stipulations, are completed. If the result is to reduce economic activities within an area that has few cash-generating activities, personal and community well-being may be diminished, or it may be strengthened by protecting subsistence species from competition.

Effects from Paleontological and Soil Resources Minor positive or negative social impact may occur related to protection of resources or limiting human activities.

Effects from Special Status Species

Existence of species provides a sense of well-being for individuals and groups that value resource existence and diversity. Additional restrictions or mitigation measures due to presence of Special Status Species may result in fewer projects and thus fewer employment opportunities, reducing well-being for some individuals and groups. Other impacts will not be known until Special Status Species management plans are developed.

Effects from Vegetative Communities

Requirements to revegetate fire lines reduces the number of possible OHV routes where areas are closed to off-trail travel, potentially limiting motorized recreation opportunities and reducing the areal extent of subsistence activities due to time required for off-trail travel.

Effects from Visual Resources

To the extent that human activities are restricted by VRM class designations, there will be local positive (unimpaired senses of natural world and solitude) and negative (economic and possibly subsistence) impacts with broad existence-value benefits to some individuals and groups.

Effects from Water Resources

Minor positive or negative social impact may occur related to protection of subsistence resources or reduced economic activities.

Effects from Wilderness Characteristics

Under current management, no area is designated as wilderness, yet significant tracts continue to retain wilderness characteristics. Wilderness characteristics will not be a priority resource in any subunit or alternative. In some areas impacts to wilderness characteristics will be reduced during site-specific permitting. Minor positive or negative social impacts may occur.

Effects from Wildland Fire Ecology and Management

A segment of the population views current wildland fire management options as opportunities for small fires to grow quite large and require more substantial fire fighting resources than if addressed at a smaller stage. This observation is in part a reaction to the smoke and community disruption from large firefighting actions. The result is heightened frustration by the time firefighters are called in to fires near communities, but outside community protection zones. Wildland fire is a necessary component of this ecosystem, however years (such as 2004, 2005, and 2009) when several large fires consume significant areas of the Interior create greater emotional and physical stress, reduce subsistence in the immediate area for the short-term, and can limit tourism and recreation in the smoke-influenced area in both the short- and long-term.

Effects from Wildlife

Minor positive or negative social impact may occur related to protection of subsistence resources or reduced economic activities. Other effects would be similar to those discussed for Special Status Species.

Forest and Woodland Products

Harvest of cabin logs and home firewood are not considered subsistence uses and will be allowed with appropriate permits and in compliance with the SOPs. Not all areas will be open to such use, though recreational firewood harvest of dead or downed wood is available throughout the planning area. For recreationists, this allows a more familiar camping experience, as long as low or moderate fire danger allows campfires. For residents, few live close enough to public land for it to be a convenient source of firewood. The exceptions are at Circle and Eagle. Land close to Circle may be disposed of to consolidate BLM lands and activities. Land close to Eagle is part of the Fort Egbert Historic Site or BLM's campground, and is unavailable for firewood in order to preserve some of the natural and historic environment. Given the other nearby sources, including recent fire-scorched trees, there is no significant impact to communities in the planning area.

Lands and Realty

Impacts are expected to be minor, and may be positive or negative. Opportunities for renewable energy may help individuals at scattered cabin sites or within villages, but no community- or region-level projects are likely, so the cost of energy will likely continue to be a large portion of individual and community budgets, affecting well-being and quality of life.

Effects from Leasable and Salable Minerals

Social impacts are expected to be minor because of limited resource availability.

Effects from Locatable Minerals

Extensive withdrawals have limited this activity within the planning area. To the extent that withdrawals exist, mining will cease to be a significant aspect of public land use within the planning area. No remnant activities will occur on public land to give context to the various displays of the mining era. Reduced opportunities for participation at a lifestyle or recreational level will reduce individual well-being, and community well-being in Center and Chicken.

Preventing or reducing placer mining may improve subsistence catches of some fish species. This will increase the sense of well-being among populations targeting such species, and will increase food security if other food sources are displaced by wildland fire, climate change, or other factors.

Effects from Recreation

Minor positive or negative social impact related to reduced subsistence or economic activities, while maintaining or improving a spectrum of recreational opportunities.

Effects from Travel Management

Minor positive or negative social impact related to reduced economic activities, while maintaining or improving a spectrum of recreational opportunities.

Effects from Withdrawals

In the action alternatives, some areas are recommended to be open to new mineral claims and leasing for the first time in over a generation. Additional placer mining could reduce target fish species, creating a reduced sense of food security for federally qualified subsistence users. Those that benefit economically from mineral extraction could have increased quality of life. Among recreationists, those who see human impacts as detrimental to their experience would have a reduced quality of life, while those that participate in recreational mining or enjoy the connection to the past would have an increased quality of life. Those who value opportunities for resource use would have a greater quality of life with withdrawals lifted, while those who value semi-pristine landscapes would have a reduced quality of life.

Effects from Special Designations

Wild and Scenic Rivers - Minor positive or negative social impact related to reduced subsistence or economic activities, while maintaining or improving a spectrum of recreational opportunities.

Effects from Hazardous Materials

Minor positive or negative social impact because of limited activities.

Effects from Subsistence

A high priority among resource uses is to provide for habitat conservation to support abundant target species populations, in part by limiting other resource uses. As subsistence is key to physical and cultural well-being of many people within the planning area, this supports individuals and communities. It can also displace cash market activities, limiting economic well-being of those not participating in subsistence activities, as well as limiting the means to earn cash for subsistence participants to acquire equipment and supplies required from the cash market.

In addition to food security, subsistence is a key component of Alaska Native culture; a personal and social responsibility, a connection with kin and the broader community, and a connection with the land in a manner that defines aspects of individual communities. Protection of subsistence rights and resources increases Alaska Native social well-being.

4.3.4.3.2. Alternative A (No Action)

While some groups have a higher level of well-being and quality of life, others feel their interests have not been taken into consideration, so have a reduced quality of life. Some current management decisions are made on a project-specific basis, which can lead to a sense of inequity or uncertainty when activities are proposed or when attempting to comply with requirements, which results in a lower quality of life by challenging belief systems for both resource users and

resource protectors. In particular, some individuals and groups can feel that their interests are not considered.

4.3.4.3.3. Alternative B

Institutes significant changes from current management, causing distractions from existing lifestyles for some residents and visitors. These changes result in improved quality of life for those who value non-motorized recreation, existence of wilderness or near-pristine natural conditions, and provide potential improvement in well-being for individuals using some subsistence resources and areas that will be protected. Current users relying on motorized vehicles will have a decline in well-being and quality of life because they will not be able to access some remote locations for recreational activities, including retrieving non-subsistence game by using motorized transport. Federally qualified subsistence users desiring to access closed areas (RNAs) will need to acquire free OHV permits, available at several locations or by telephone and mail. OHV use permits for federally qualified subsistence users will be available under this alternative to access portions of the Steese National Conservation Area that are limited to no summer use. The use of free permits for federally qualified subsistence users creates an administrative burden. Opportunities for improved well-being include limited openings to mineral exploration and development.

4.3.4.3.4. Alternative C

Alternative C seeks to provide a higher level of protection to highly valued resources and locations while maintaining or increasing resource use, resulting in a minor net change to quality of life that may be positive or negative to communities and groups. Protection areas are greater than current management or Alternative D, but less than Alternatives B and E. Individuals and groups that value non-motorized recreation, existence of wilderness or near-pristine natural conditions, and those who use subsistence resources provided greater protection will still see an improved well-being or quality of life, but to a lesser degree than Alternatives B or E and a greater degree than Alternative A or D. Users relying on motorized vehicles will have a decreased sense of freedom as some areas and activities, but to a lesser degree than Alternatives B or E and to a greater degree than Alternative A and D. OHV restrictions provide some areas where travel off designated routes allow hunters to retrieve game, which will improve the well-being of recreational hunters over Alternative B, but less than Alternatives A or D. Opportunities for improved economic and potential well benefits for the mining community include limited openings to mineral exploration and development, including 20 percent of the Steese National Conservation Area.

4.3.4.3.5. Alternative D

Alternative D recommends lifting withdrawals after conveyances, and institutes some protections by restricting current uses. This alternative limits OHV travel in all subunits, but to a lesser degree than all other alternatives except A. Users relying on motorized vehicles will have a decreased sense of freedom as some areas and activities, but to a lesser degree than in other alternatives. Individuals who value non-motorized experiences may have a decreased quality of life compared to Alternatives B or C. The alternative opens more areas to economic and potential well-being net benefits from mineral entry including the “scenic” segment of the Fortymile WSR and portions of the Steese National Conservation Area.

4.3.4.3.6. Alternative E (Proposed RMP)

This alternative institutes significant changes from current management, causing distractions from existing lifestyles for some residents and visitors. These changes result in improved quality of life for those who value non-motorized recreation, existence of wilderness or near-pristine natural conditions, and provide potential improvement in well-being for individuals using some subsistence resources and areas that will be protected, similar to Alternative B.

Travel management decisions are mostly deferred to a travel management plan more detailed impact analysis will occur at that time. Small areas in the Steese and White Mountains that are currently closed to all motorized use would be open to snowmobile use and areas open for the use of hovercraft and airboats would increase. Assuming individuals take advantage of these change, it would increase the sense of freedom for those who favor motorized access, while deterring from the well-being of those who value non-motorized experiences.

4.3.4.3.7. Cumulative Effects for all Subunits

Since of the varied land ownership, with multiple levels of opportunities and protections available, the communities within the planning area are likely to retain current characters and values through the anticipated activities included in the cumulative case.

Groups will feel pressures from a variety of sources. Subsistence users will be affected by changes in the amount and quality of available resources resulting from climate change and related events, primarily related to losses of the sense of food security and sense of personal control over decisions affecting one's future. Decisions pertaining to the public lands seek to protect subsistence resource habitat. Mineral development on and off public land may lead to challenges for Alaska Natives, while providing economic opportunities that improve well-being in terms of basic needs. Recreationists may face decreased opportunities for certain activities and decreased solitude, reducing their quality of life to the extent they do not embrace other activities or if they feel their needs have not been considered. The public lands are only one component of an array of recreational opportunities, and changes in the different alternatives do not preclude activities. Most of the planning area has been closed to mineral entry for a generation, and the action alternatives are written in expectation that some withdrawals will be lifted. Nearby lands have been open to mineral entry, though they may not have the mineral potential of some public lands. Miners who seek recreational and commercial opportunities will have an improved quality of life under the action alternatives, but also have opportunities away from public lands if the withdrawals are not lifted. Groups that prioritize resource protection may have a net increase or reduction in quality of life resulting from the sense that new protections do or do not outweigh continued use and new development in the area.

4.3.4.4. Subsistence

Summary of Effects

ANILCA Title VIII § 802(2) provides that "nonwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska when it is necessary to restrict taking in order to assure the continued viability of a fish or wildlife population or the continuation of subsistence uses of such population, the taking of such population for nonwasteful subsistence uses shall be given preference on the

public lands over other uses.” Restricting other uses of fish and wildlife to provide a preference for subsistence uses is outside the scope of this plan and is regulated through the Federal Subsistence Board, as established through ANILCA.

Other renewable resources include mushrooms, firewood, timber, berries, bark, and other vegetation.

Any land disturbing activities have the potential to alter habitat (change vegetation structure either by removal and or introduction of less desirable communities or invasive species), create barriers or directly disturb subsistence resources and impact distribution and availability of the resources. Subsistence resources include fish, wildlife, timber and woodland products, berries, and other vegetation.

ANILCA Title VIII § 810(a) requires an evaluation of effects on subsistence resources and uses from proposed land use activities on public lands. Impacts of management decisions on subsistence within each alternative and subunit are analyzed in this chapter and in the ANILCA § 810 Analysis of Impacts to Subsistence (Appendix J, *ANILCA Section 810 Analysis*).

4.3.4.4.1. Effects Common to All Alternatives

Proposed management of the following resources, resource uses and programs would have no anticipated negative impacts to subsistence uses or resources and will not be analyzed further: Cave and Karst, Visual Resources, Wilderness Characteristics, Renewable Energy, Special Designations, and Hazardous Materials.

The following resources, resource uses and programs would have minor effects on subsistence and would not be analyzed under impacts specific to subunits: Air and Atmospheric Values, Cultural and Paleontological Resources, Fish and Aquatic Species, Non-Native Invasive Species, Soil Resources, Special Status Species, Vegetative Communities, Water Resources, Wildland Fire Ecology and Management, and Wildlife. All other resources, resource uses and programs, including recreation, travel management, and locatable and leasable minerals, would be discussed by subunit.

Effects from Air and Atmospheric Values

Management of air and atmospheric values is expected to have minimal impact on subsistence uses and resources. Wildland fire suppression actions initiated to meet air quality laws and regulations may interrupt natural fire cycles that benefit subsistence resources. Impacts are not expected to be significant because although wildland fire can be deferred, it cannot be eliminated, especially in fire dependent ecosystems, such as the interior boreal forest.

Effects from Cultural and Paleontological Resources

Management of cultural and paleontological resources on BLM-managed lands is conducted under the National Historic Preservation Act, other federal laws and regulations, Executive Orders and other applicable BLM guidance for the protection of these resources. Some activities could include use of helicopter for access, which would temporarily displace wildlife resources. Most of these activities would be conducted outside of periods important for wildlife (calving and post-calving seasons) and harvest of subsistence wildlife resources, therefore impacts are expected to be minimal. Where conflicts could occur, Inventory, research, rehabilitation, protection, use or

other related program activities are not expected to impact subsistence uses or resources in any of the subunits or under any of the alternatives.

Effects from Fish and Aquatic Species Resources

Fish and wildlife resources in the planning area are important to most federally qualified subsistence users in and adjacent to the planning area. Some fish and wildlife activities may include use of helicopter for access, which would temporarily displace wildlife resources. Most of these activities are conducted outside of periods important for harvest of subsistence wildlife and impacts are expected to be minimal. Management of fish resources and mitigation of impacts to fish are expected to benefit subsistence resources through maintenance of healthy, functioning watersheds, riparian areas and associated fish habitats. (Refer to Fish and Aquatic Species in Chapter 2 and Chapter 4 for further discussion on management of and impacts to fish resources.)

Effects from Non-native Invasive Species

Invasive species can alter vegetative communities, and fish and wildlife habitat, which impacts subsistence resource populations. Under all alternatives and subunits, the intent for management of invasive species would be to reduce their impact within and adjacent to the planning area. Management of invasive species in Alaska is largely possible through early detection and rapid response. In some cases, more intensive integrated pest management could be employed. Management of non-native invasive species would use best integrated pest management (IPM) practices that reduce impacts to other resources, including subsistence resources, uses and access to resources. A step-down Invasive Species Management Plan would be developed within five years of signing the RMPs. Proposed IPM treatments would be analyzed at the project level through NEPA and an ANILCA Title VIII § 810 Evaluation and Finding would be conducted.

Effects from Soil Resources

Management decisions to reduce erosion and impact to soil profiles from all authorized surface-disturbing activities and to maintain watersheds in proper functioning condition would protect subsistence opportunities, uses and resources. Decisions that would protect soil resources would also protect subsistence resources, which include weight limits on OHV use, and weight and depth of frozen ground and snow cover for winter overland travel. No adverse impacts are expected from management of soil resources.

Effects from Special Status Species

No adverse impact to subsistence resources or uses is expected from management prescriptions for special status animal and plant resources and communities. Management that safeguards against the need to list species under the Endangered Species Act would benefit subsistence resources by protecting habitats and plant communities upon which they rely.

Effects from Vegetative Communities Management

No adverse impacts to subsistence resources or uses or access to resources is expected from management of vegetative communities within the planning area. Vegetation management decisions would benefit subsistence resources by ensuring that habitats support healthy, productive, and diverse populations and communities of native plants and animals.

Effects from Water Resources

No adverse impacts to subsistence resources or uses are anticipated from management of water resources. The management focus is on maintaining or improving water quality, which would benefit subsistence resources. Ensuring maintenance of sufficient instream flow in the three Wild and Scenic Rivers in the planning area would also benefit subsistence resources.

Effects from Wildland Fire Ecology and Management

Wildland fire has been and continues to be a normal and dominant feature in ecosystem processes in the planning area. Boreal forests are fire dependent systems and disturbance by wildland fire is important as a natural agent of change. Much of BLM-managed lands in the planning area are in Limited or Modified fire management options, allowing a more natural fire regime. Fire management options can be amended to respond to changing ecological and other conditions (BLM 2005b). Options in critical habitats can be changed to lower or higher protection levels to allow or defer wildland fire from the area.

Decades of wildland fire deferral in Alaska have resulted in buildup of fuels. Drought conditions have occurred in some regions of the planning area. Potential results from wildland fire deferral and changes in climatic conditions are larger and more frequent fires. Increased emphasis on suppression to avoid larger fires (whether to protect air quality, timber or other resources), could impact wildlife habitat by changing ecosystem processes.

Wildland fire occurrence and active fire management have the potential to impact subsistence resources by altering the distribution and movements of a species or through direct changes to a population. The impacts can be positive or negative. Alteration of distribution and migration patterns may be relatively long-term, as in the case of fire on winter caribou range (Collins et al. 2011), or short-term, as in renewal of moose browse. The effects of wildland fire on caribou winter range can alter availability of resources to federally qualified subsistence users for many years. Impacts to subsistence resources (wildlife, fish, vegetative communities, forests and woodland products) as a result of wildland fire and fire management decisions are discussed further in sections 4.3.1.4, 4.3.1.8, 4.3.1.12, and 4.3.2.1, and under discussion of impacts to specific subunits. A discussion of fire regimes on the century scale and under climate change are discussed in section 4.3.1.12.

Impacts on subsistence resources and uses as a result of wildland fire and fire suppression activities would be expected to be minimal within the planning area. Mitigation designed to reduce impacts of fire suppression activities would include limitations on use of dozer lines and off-road vehicles, rehabilitation of lines, and measures to prevent the introduction and spread of non-native invasive plants. (Impacts to vegetative communities and wildlife habitat by non-native invasive plants are discussed in sections 4.3.1.8 and 4.3.1.12, and in sections on specific subunits).

Prescribed burns and hazard fuel reduction could be proposed within the planning area over the life of the plan. In most cases, either action would be beneficial to subsistence resources. Such actions would be fully analyzed through an environmental assessment and include rigorous stipulations to mitigate impacts to subsistence and other resources.

Effects from Wildlife Resources

Wildlife resources in the Eastern Interior are important to federally qualified subsistence users in and adjacent to the planning area. Management of wildlife resources and mitigation of impacts to wildlife would be expected to benefit subsistence resources through maintenance of ecosystem functions and the quality and quantity of habitat to support healthy populations of wildlife. (See

Chapter 2 Wildlife for management decisions for wildlife and Chapter 4 for impacts to wildlife.) Specific decisions that will benefit wildlife subsistence species include reducing risk of disease transmission to Dall sheep by limiting use of domestic sheep, goats, and llamas in Dall sheep habitat, limiting activities in wildlife habitat during lambing and calving/post-calving, and maintaining movement corridors for wildlife when permitting land use activities.

Effects from Forest and Woodland Products

Decisions on forest and woodland product management could impact subsistence use through reduction in availability of these products and other subsistence resources. Commercial harvest of forest and woodland products and some personal harvest of forest products on lands managed by the BLM would require a permit. Personal use of woodland products, such as berries and mushrooms, would not require a permit for quantities less than five gallons. Personal use products cannot be sold. Subsistence use of woodland products would be subject to customary barter and trade provisions regulated by the Federal Subsistence Board and are not discussed in this document.

Low levels of forest product sales would be expected in the planning area (three free-use permits and one small sales vegetative contract have been issued during past 10 years) and impacts of forest product management on subsistence use would be anticipated to be low in all subunits and alternatives. The low value of timber resources on BLM-managed lands in the planning area would limit the extent of roads and trails build for access to forest resources. However, most alternatives would allow commercial harvest in areas where it has not been previously allowed and improved access to timber from other developments could result from access built for other activities, such as the road to Pogo Mine.

A NEPA process would be conducted for commercial permits. Impacts to subsistence resources and uses would be analyzed and appropriate stipulations would be applied to the permit to mitigate impacts.

Decisions for personal use of timber and woodland products vary by subunit and alternative. Where personal use of timber would be allowed, Free Use Permits would be available for personal use of up to 10 cords of firewood and approximately 5 units of 1000 board feet (MBF) of timber. Gathering of woodland products (i.e., berries and mushrooms) for personal use would be allowed in all subunits and action alternatives. Personal use of woodland products up to five gallons per species could be harvested without a permit. BLM forestry regulations require a permit for quantities above this amount. These requirements would apply to subsistence uses of timber and woodland products. Where alternatives include closures to free-use of timber resources, impacts would be analyzed by alternative within subunits.

Effects from Lands and Realty

Land conveyances to the State or Native Corporations would become managed under state regulations only for fishing, hunting, trapping and use of vegetation and forest products. In some cases, harvest regulations on these lands may be more restrictive than the federal regulations on BLM-managed lands. Where access to federal public lands is across lands conveyed through ANCSA, easements may be created to the benefit of subsistence and all users. Land conveyances to State or Native Corporations are required by law and are outside the scope of this plan.

Lands acquired by the BLM would be managed under federal subsistence and state management regulations unless the area is closed to all but federally qualified subsistence users through

regulations promulgated by the Federal Subsistence Board. In most of the planning area, state and federal regulations allow the same bag limits, seasons, methods and means, differences primarily being in season dates. Where seasons currently differ, little BLM public land would be identified for exchange, disposal or acquisition.

Within the planning area, the transfer of lands identified for potential acquisition, disposal or exchange would not be expected to impact subsistence uses or resources. In most cases changes in land tenure would be beneficial for federally qualified subsistence users. Consolidation of scattered lands into blocks would make it easier for users to identify land status on the ground, lessening uncertainty of which regulations affect the area. Common to all action alternatives for the Steese and Upper Black River Subunits would be the identification for exchange of lands around the village of Circle.

Effects from Recreation

Subsistence activities and resources would continue to be impacted by recreational uses in all subunits and alternatives. Impacts would vary in scope depending on the recreation management zones and decisions on travel management prescriptions within each subunit and alternative. These will be analyzed further by subunit.

4.3.4.4.2. Cumulative Effects

Cumulative impacts on subsistence are discussed under impacts specific to the subunits and in Appendix J, *ANILCA Section 810 Analysis*.

4.4. Impacts Specific to the Fortymile Subunit

4.4.1. Resources

4.4.1.1. Cultural and Paleontological Resources Fortymile Subunit

Summary of Effects

See section 4.3.1.3 Effects Common to All Alternatives, Impacts common to All Subunits.

4.4.1.1.1. Alternative A (No Action)

Effects from Locatable Minerals

At present, direct and indirect adverse effects from the locatable minerals program on cultural and paleontological resources occur only on existing, federal mining claims, of which there are currently 9,900 acres in the subunit. All other lands, more than 1,866,000 acres, are presently withdrawn from mineral entry and leasing under ANCSA17(d)(1) withdrawals. Most if not all locatable mineral mining that is presently occurring is surface-disturbing, open-air mining, and not underground mining which is accessible through shafts and adits, which would otherwise leave the upper ground surface undisturbed.

Three types of placer mining operations could occur: (1) suction dredge operations, where the only surface disturbance relates to the supporting camp, (2) small-scale placer mines, where disturbance is limited to less than five acres per operation, with an assumed total area of 20 to 30 acres for the life of each mine, and (3) large-scale placer mines, where disturbance is estimated at five to twenty acres per operation, with an assumed total area of 60 to 80 acres for the life of each mine.

Further assumptions for locatable minerals for Alternative A in the Fortymile Subunit indicates six suction dredge operations annually, 27 small-scale placer mines, and two large-scale mines. This equates to 684-994 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred throughout the Fortymile drainage for at least the previous 120 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

In addition, new access roads often need to be constructed in order to reach new mineral claims. The construction of new roads not only has direct adverse impacts on cultural and paleontological resources, but would also have an indirect effect by providing new access to previously isolated lands. With improved access, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Effects from Recreation

A wide range of recreational opportunities are available and are authorized in the Fortymile Subunit, including established campgrounds, private and commercial floating, and both motorized and non-motorized overland travel. The construction of infrastructure to support these activities can be ground disturbing, and thus could directly affect cultural and paleontological resources.

Also, visitors to the public lands may find surficial cultural and paleontological resources, and thus have the potential to adversely impact such resources, either intentionally or unintentionally.

Special recreation management areas (SRMA), recreation settings, and recreation management zones are not currently addressed in existing plans, and thus have no effects upon cultural resources.

Effects from Travel Management

Current management indicates that OHV use of vehicles greater than 1,500 pounds are prohibited without a permit inside the Fortymile WSR Corridor (248,000 acres). OHV use in the remainder of the Subunit (1,628,000 acres) is limited to 6,000 pounds; in excess of this would require a permit.

The use of motorized watercraft within the Fortymile WSR Corridor is currently not allowed on non-navigable “wild” segments of the river system, and is allowed on “scenic” and “recreational” segments. Use of watercraft has minimal direct impact on cultural and paleontological resources. Use of watercraft has the potential for indirect impacts on these resources by providing access to otherwise inaccessible lands. With river access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Based upon current trends, the BLM assumes ever increasing travel visitation and use, both motorized and non-motorized in the Fortymile Subunit, with OHV use accounting for the majority of travel-related activities. The current visitation rate of increase is approximately ten percent per year, which is expected to continue for the foreseeable future. At this rate, travel visitation in the Fortymile Subunit would be expected to double within the next 10 years. Additional trails and mechanisms for managing these trails would be necessary. Some new trails, for both motorized and non-motorized activities, as well as other travel facilities such as boat launches, may need to be constructed. Construction of new trails, like any other surface-disturbing activities, would have the potential to directly and adversely affect cultural and paleontological resources.

In addition, the construction of new trails would also have an indirect effect by providing new access to previously isolated lands. With improved access, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.4.1.1.2. Alternative B

Effects from Locatable Minerals

Alternative B would have the same direct and indirect effects on cultural and paleontological resources as Alternative A, except the potential impacts to these resources would be increased as new areas would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative B, 1,076,000 acres would be closed and 800,000 acres of previously withdrawn lands would be recommended open to locatable mineral entry (Map 26). Closed areas include all of the Fortymile WSR, the Fortymile SRMA, the Fortymile ACEC, one mile around ungulate mineral licks, disposal lands, BLM administrative sites, Fort Egbert, and the Eagle recreation withdrawal.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Fortymile Subunit. Further assumptions for Alternative B indicates 10

suction dredge operations in any given year, 31 small-scale placer mines, and three large-scale mines. This equates to approximately 840–1,210 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred throughout the Fortymile drainage for at least the previous 120 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

In Alternative B, the Fortymile SRMA would be created (798,000 acres). A wide range of recreational opportunities would be available and/or authorized in seven Recreation Management Zones (RMZs). The “setting characteristics” for these RMZs range from Semi-Primitive, Backcountry, Frontcountry, Middlecountry, and Rural settings (Map 44). See also Table 2.5. The recreation management objectives associated with each of these is well defined, with differing emphases on building and maintaining facilities, trails, and a range of summer and winter OHV uses. Construction of public and administrative facilities by the BLM to meet recreational demand can directly and adversely impact surface and subsurface cultural and paleontological resources. The BLM assumes a ten to fifteen percent increase over the life of the plan in demand for recreational users and visitation (both motorized and non-motorized), resource damage, and user-resource conflicts. The construction of infrastructure to support these activities would likely be ground disturbing, and thus can potentially directly affect cultural and paleontological resources. Also, any increased visitation to the public lands has a concurrent potential increase for inadvertently finding surficial cultural and paleontological resources and adversely impacting such resources, either intentionally or unintentionally.

Effects from Travel Management

Under Alternative B, OHV use is not permitted during the summer on 626,000 acres (corresponding to the Semi-Primitive RMZs in this alternative), and is limited to existing routes and weights (see Alternative A) in the summer to the remaining 1,250,000 acres in the Subunit. All lands in the Subunit (1,876,000 acres) are limited to existing OHV weights and widths during the winter months.

There would be little to no direct impacts to cultural or paleontological resources by the proposed OHV uses in this alternative, as they are limited to existing trails and routes in the summer, and the winter ground cover of snow would protect most types of cultural resources and all paleontological resources. Indirect impacts to cultural resources would be likely, however, as the development of unauthorized trail development would likely continue in the Subunit.

The use of motorized watercraft within the Fortymile WSR Corridor would not be allowed on non-navigable “wild” segments of the river system excepting downstream of the Kink on the North Fork, and would be allowed on all “scenic” and “recreational” segments. Same as Alternative A, the use of watercraft has minimal direct impact on cultural and paleontological resources.

The current visitation rate of increase is approximately ten percent per year, which is expected to be maintained for the foreseeable future. Even if most of this is assumed to be by OHV users, there is still a probable increase in use by non-motorized users in the subunit, both on and off established trails. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

4.4.1.1.3. Alternative C

Effects from Locatable Minerals

Alternative C would have the same direct and indirect effects on cultural and paleontological resources as Alternative A, except the potential impacts to these resources would be increased as more land would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative C, 623,000 acres would be closed and 1,253,000 acres of previously withdrawn lands would be recommended open to locatable mineral entry (Map 28). The closed areas in Alternative C would be the same as those in Alternative B, except more of the Fortymile ACEC would be opened to potential development. Alternative C has more acres opened to potential mineral activity than Alternative B, and thus would have a greater potential for adverse impacts to cultural and paleontological resources.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Fortymile subunit. Further assumptions for locatable minerals for Alternative C indicates 14 suction dredge operations in any given year, 33 small-scale placer mines, and three large-scale mines. This equates to approximately 896–1,286 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred throughout the Fortymile drainage for at least the previous 120 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

In Alternative C, a smaller Fortymile SRMA would be created (248,000 acres). A wide range of recreational opportunities would be available and/or are authorized in nine RMZs, covering a wide range of established and well defined “setting characters” ranging from Semi-Primitive, Backcountry, Frontcountry, Middlecountry, and Rural settings (Map 45). See also Table 2.5. Alternative C is overall very similar to Alternative B, except there are more acres in Frontcountry and Middlecountry RMZs and fewer acres in Semi-Primitive and Backcountry RMZs. There would be a concomitant rise in potential adverse effects on cultural and paleontological resources under Alternative C, as there would be more emphasis on recreational infrastructure development.

Effects from Travel Management

Same as Alternative B, except for a decrease in the number of acres closed to summer OHV use (144,000), and an increase in the number of acres opened up to OHV use on existing routes and weights (1,732,000). The impacts to cultural and paleontological resources would be the same as Alternative B, except for an increased likelihood of indirect impacts to cultural resources owing to a decreased number of acres being closed to summer OHV use.

4.4.1.1.4. Alternative D

Effects from Locatable Minerals

Alternative D would have the same direct and indirect effects on cultural and paleontological resources as outlined in Alternative A, except the potential impacts to these resources would be increased as more lands would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative D, 163,000 acres would be

closed and about 1,713,000 acres of previously withdrawn lands would be recommended open to locatable mineral entry (Map 30), including the "scenic" segments of the Fortymile WSR Corridor and portions of the Wade Creek "recreational" segment; Alternatives A, B, C, and E exclude the entire Fortymile WSR Corridor. Alternative D has more acres opened to potential mineral activity than any alternative, and thus would have a greater potential adverse impact to cultural and paleontological resources. In addition, the number of known cultural resources within the "scenic" and "recreational" segments of the WSR corridor is quite dense relative to areas in the "wild" segments and outside of the corridor. The adverse impacts upon cultural and paleontological resources by Alternative D, relative to Alternatives B, C, and E would be much greater.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Fortymile Subunit. Further assumptions for locatable minerals for Alternative D indicates 18 suction dredge operations in any given year, 40 small-scale placer mines, and three large-scale mines. This equates to approximately 1,052–1,512 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred throughout the Fortymile drainage for at least the previous 120 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

Same as Alternative C, except there would be 10 RMZs created (see Map 46 and Table 2.5), with even more acreage devoted to Frontcountry and Middlecountry RMZs and less acreage to Semi-Primitive and Backcountry RMZs. As a result, there would be an increased potential for adverse effects on cultural and paleontological resources under Alternative D relative to Alternative C, as there would be more emphasis on recreational infrastructure development.

Effects from Travel Management

Same as Alternative B and C, except for a further decrease in the number of acres closed to summer OHV use (54,000), and a further increase in the number of acres opened up to OHV use on existing routes and weights (1,822,000). The impacts to cultural and paleontological resources would be the same as Alternative B and C, except for a further increase in the likelihood of indirect impacts to cultural resources owing to a decreased number of acres being closed to summer OHV use.

4.4.1.1.5. Alternative E (Proposed RMP)

Effects from Locatable Minerals

In Alternative E, 745,000 acres would be closed and 1,132,000 acres of previously withdrawn lands would be recommended open to locatable mineral entry (Map 31). Areas closed include the Fortymile WSR, the proposed Fortymile ACEC, the proposed Mosquito Flats ACEC, within one mile of ungulate mineral licks, the BLM's administrative site, historic Ft. Egbert, and the Eagle recreation withdrawal. Alternative E has more acres opened to potential mineral activity than Alternative B, but less than Alternatives C and D, and thus would have greater or lesser potential adverse impacts to cultural and paleontological resources, accordingly.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Fortymile subunit. Further assumptions for numbers and types of locatable minerals operations for Alternative E are the same as Alternative B.

Effects from Recreation

Same as Alternative C in terms of the numbers of the size of the Fortymile SRMA and acres devoted to Semi-Primitive, Backcountry, Middlecountry, Frontcountry, and Rural RMZs, except there would be only five RMZs created (see Map 47 and Table 2.5). The overall result of the particulars of this Alternative is that the potential for adverse effects on cultural and paleontological resources under Alternative E relative to Alternative C would be the same, but it would be more than Alternative B, and less than Alternative D.

Effects from Travel Management

A Travel Management Plan would be developed for the Fortymile Subunit after approval of the RMP. Until that time, interim management would be the same as Alternative A, with a few exceptions, including a decrease in the weight limits of summer and winter OHVs in certain portions of the Subunit, a removal of the prohibition of motorboat use in “wild” segments of the Fortymile WSR, and implement a summer restriction on OHVs in the proposed Mosquito Flats ACEC. These new exceptions to current management practices would not directly affect cultural and paleontological resources, except to potentially increase the indirect effects on cultural resources by the removal of the motorboat prohibition by providing access to otherwise previously inaccessible lands. With access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.4.1.2. Fish and Aquatic Species Fortymile Subunit

Summary of Effects

Fish and aquatic resources would be primarily affected by surface-disturbing activities (such as placer mining or trail construction) which alter stream channels, remove or damage riparian vegetation, or result in soil erosion and sedimentation to fish and aquatic habitat. The level of impact would depend on the success and adequacy of protective measures.

Table 4.8. Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit

FORTYMILE SUBUNIT (BLM-managed lands)	ALTERNATIVES				
	A	B	C	D	E
Stream miles	3,393	3,393	3,400	3,393	3,393
Stream miles open to locatable minerals (proposed)	0	1,300	2,000	2,900	1,900
Stream miles open to locatable minerals (proposed) plus miles within current valid federal claims	78	1,400	2,100	3,000	2,000
Stream miles within RCAs in areas open to locatable minerals (proposed)	N/A	9	0	0	0
Stream miles outside RCAs in areas open to locatable minerals (proposed)	N/A	1,300 (99%)	2,000 (97%)	2,900 (98%)	2,000 (99%)

FORTY MILE SUBUNIT	ALTERNATIVES				
(BLM-managed lands)	A	B	C	D	E
Acres open to locatable minerals (proposed)	0	800,000	1.2 million	1.7 million	1.1 million
Acres open to locatable minerals (proposed) plus acres within current valid federal claims	10,300	810,000	1.2 million	1.7 million	1.1 million
Anticipated stream gravel disturbance by suction dredging during life of plan measured in cubic yards	240,000	400,000	560,000	720,000	400,000
Potential impacts to fish and aquatic habitat (1-4, 4 = greatest)	1	2	4	5	3

4.4.1.2.1. Alternative A (No Action)

Effects from Leasable Minerals

No lands within the Fortymile Subunit are open to leasing of either fluid minerals (oil and gas) or solid minerals (coal). There are no existing mineral leases. Under this alternative, impacts to fisheries and aquatic resources would be non-existent.

Effects from Locatable Minerals

No lands within the Fortymile Subunit are open to new locatable mineral entry subject to valid existing claims. Current active federal mining claims occur on 10,000 acres, but not all of those acres are being mined. Including current valid federal claims, this alternative has 73 stream miles open to locatable minerals which is the least amount as compared to Alternatives B, C, D, and E (Table 4.8, "Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit"). The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative A is estimated at up to 970 acres, or approximately 14 miles of stream over the life of the plan.

It is anticipated that during the life of the plan 60 suction dredging operations would occur within the subunit. It is assumed that each operation would last two years (this applies to all alternatives). The amount of stream gravel disturbed from one suction dredging operation is estimated to be 2,000 cubic yards per year. During the life of the plan 240,000 cubic yards of stream gravel could be disturbed. In general, the impacts associated with suction dredging are described in the Common to All Alternatives section 4.3.1.4. Impacts from suction dredging would be localized and minor if suction dredging operations were restricted in areas where fish are actively spawning or where spawning has recently occurred. Suction dredging in this alternative would have the lowest impact due to the least amount of gravel disturbance (Table 4.8, "Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit").

Fish species impacted from locatable mineral activity in the this subunit would typically be Arctic grayling and whitefish species, since they are the predominant species in the subunit. Under Alternative A, protection of fish and aquatic habitat would rely on current regulations and mitigation measures developed during project-specific NEPA analysis. Impacts to fish and aquatic resources in this alternative would be considered low to moderate, but could have long-term effects resulting in an overall decrease in levels of fish populations at the local level. Compared to the other alternatives, Alternative A would likely provide the greatest protection to fisheries and aquatic resources, because it would result in the least amount of potential disturbance (Table 4.8,

“Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit”). However, under this alternative, fish and aquatic resources may not benefit from the higher reclamation standards and SOPs proposed in this plan which are designed to minimize impacts and reduce recovery time. As such, Alternative A may have similar adverse long-term impacts than other action alternatives.

Effects from Recreation Management

Impacts would be similar to those described in Common To All Alternatives. There are no SRMAs that would identify recreation objectives or establish visitor use limits. Unmanaged trail proliferation would continue to occur with no established standards to ensure the proper construction and placement of new trails. Alternative A would provide the least protection to fish and aquatic habitats from recreation activities, however impacts to fish and aquatic habitat are expected to be minimal.

Effects from Travel Management

Within the Fortymile WSR Corridor, OHV use is limited to 1,500 GVWR and less and off-road travel is authorized. Travel outside the Fortymile WSR is generally unrestricted providing for off-road travel for vehicles weighing under 6,000 pounds GVWR. OHV use is assumed to increase during the life of the plan, therefore trail proliferation would be expected to increase under this alternative with a resulting increase in erosion and sediment impacts. Based on these assumptions, this alternative could have moderate adverse short- and long-term impacts on fish and aquatic resources. This alternative has more potential to effect fish and aquatic habitat than Alternatives B, C, and D and the same potential as Alternative E.

Effects from Special Designations

The Fortymile WSR corridor is withdrawn from mineral entry and mineral leasing, except for valid existing claims. Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact. These withdrawals reduce future adverse impacts on fish and aquatic habitat from mineral development.

4.4.1.2.2. Alternative B

Effects from Leasable Minerals

Under Alternative B, 800,000 acres would be open to mineral leasing. Although lands would be open to fluid minerals (oil and gas) and solid minerals (coal) leasing, limited potential exists for these resources within the subunit. Industry has shown no interest in leasing or development in the Fortymile Subunit. If leasing occurred, further NEPA analysis would be required. Based on the limited leasable mineral potential in the subunit, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or nonexistent.

Effects from Locatable Minerals

Under Alternative B, 800,000 acres would be open to locatable mineral entry (Map 26). A large portion of the fish and aquatic habitats in the subunit are located within the Fortymile WSR Corridor, Fortymile ACEC, and the Fortymile SRMA, which would be closed to locatable minerals. Including valid existing federal mining claims, approximately 1,400 miles, or forty-one percent of the stream miles within the entire subunit would be open to locatable minerals. Less

than one percent of those miles occur within RCAs, which require higher reclamation standards. Under Alternative B, ninety-nine percent of the stream miles open to locatable minerals would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis to ensure sustained yield of fisheries resources. The likelihood of impacts would be greatest in areas of medium to high mineral potential, which equates to roughly 822 of the 1,400 miles that are open to locatable mineral entry. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative B is estimated at 1,200 acres, or approximately 17 miles of stream over the life of the plan (BLM 2015 RFD).

One hundred suction dredging operations are anticipated during the life of this plan (BLM 2015 RFD). The amount of stream gravel disturbed from one suction dredging operation is estimated to be 2,000 cubic yards per year. During the life of the plan 400,000 cubic feet of stream gravel could be disturbed. In general, the impacts associated with suction dredging are described in the Impacts Common to All Alternatives section 4.3.1.4. Potential impacts from suction dredging under this alternative are greater than in Alternative A due to increased disturbance (Table 4.8, “Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit”).

Over 800 miles of stream with medium to high mineral potential and forty-one percent of the stream miles within the entire subunit would be open to locatable minerals, impacts to fish and aquatic resources in this alternative may be low to moderate with long-term (10–20 years) effects. This would result in decreased levels of fish populations and habitat condition at the local level. Based on the amount of potential disturbance, adverse impacts to fish and aquatic habitat under this alternative would be greater than under Alternative A and less than Alternatives E, C, and D.

Effects from Recreation Management

Impacts would be similar in type to those discussed under Common to All Alternatives. Under Alternatives B, C, D, and E, SRMAs would contain RMZs, each of which would be managed for specific activities, experiences, and benefits in a corresponding prescribed setting (Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry and Rural). Impacts to fisheries and aquatic resources would be lowest in Primitive Zones and would gradually increase across the range of management zones with the greatest impacts being realized in the Rural Zones. In these zones, impacts would be associated with increased visitor use and landscape alterations, such as roads and trails leading to increased trampling of riparian vegetation and potential erosion. This alternative has the greatest number of RMZs on the Primitive end of the scale and thus provides the least potential impacts. In this alternative the Fortymile SRMA would contain 792,000 acres and have seven different management zones. This alternative would provide more protection to fish and aquatic habitat than Alternative A, D, and, C, but less than E.. Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Travel Management

In this alternative, OHV use is restricted to existing routes (off-road travel is prohibited) and to vehicles weighing 1,500 GVWR and less. Thirty percent of the subunit would be designated as Semi-Primitive, which prohibits the summer use of OHVs. Alternative B would provide the greatest protection to fish and aquatic habitat. Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Special Designations

The effects from the Fortymile WSR are similar to those in Alternative A. In addition, the Fortymile ACEC would be established for the protection of caribou and Dall sheep habitats. This ACEC would close an additional 516,000 acres to entry, location, and leasing of minerals subject to valid existing rights. A mining Plan of Operations would be required on any mining activity within the ACEC. Fish and aquatic resources within the ACEC would benefit from mineral entry closure by limiting the adverse impacts from mining to valid and existing claims. In addition, the Plans of Operation requirement would entail the incorporation of specific fisheries rehabilitation measures. Outside of the Fortymile WSR Corridor, habitats would potentially benefit from the increased resource protection accompanying the special designation.

Under Alternative B, five miles of Dome Creek and four miles of Gold Run Creek would be recommended as suitable for designation as WSRs. These creeks are likely to support Arctic grayling and whitefish species. Fisheries and aquatic resources benefit from WSR designations because of development limitations and closures to mineral entry and leasing. This Alternative would be more beneficial to fish and aquatic resources than Alternatives A, C, and D, but not as beneficial as E.

4.4.1.2.3. Alternative C

Effects from Leasable Minerals

Under Alternative C, 1.2 million acres would be open to mineral leasing. Although lands would be open to fluid minerals (oil and gas) and solid minerals (coal) leasing, the limited potential exists for these resources within the subunit. Industry has shown no interest in leasing development in the Fortymile subunit. If leasing occurred, further NEPA analysis would be required. Based on the limited leasable mineral potential in the subunit, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or nonexistent. Impacts under this alternative are potentially greater than in Alternatives A, B, and E because more acres are open to disturbance.

Effects from Locatable Minerals

Under Alternative C, 1.3 million acres would be open to locatable minerals. The Fortymile WSR Corridor, a smaller Fortymile ACEC, and the Fortymile SRMA would remain closed to locatable minerals (Map 28). Including valid existing federal mining claims, this alternative allows for an additional 700 stream miles to be opened to locatable minerals as compared to Alternative B (Table 4.8, “Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit”), none of which would be within RCAs requiring a higher standard for reclamation. Under Alternative C, fisheries and aquatic resources open to locatable minerals would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis.

Of the 2,100 miles of stream open to locatable minerals, approximately 1,200 stream miles fall within areas having medium to high mineral potential. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative C is estimated at up to 1,200 acres, or approximately 18 miles of stream over the life of the plan. In addition, 140 suction dredging operations are anticipated during the life of this plan. The amount of stream gravel disturbed from one suction dredging operation is estimated to be 2,000 cubic yards per year. Over the life of the plan 560,000 cubic yards of stream gravel could be disturbed. Impacts from suction dredging are discussed in section 4.3.1.4 Impacts Common to All Alternatives.

Over 1,200 miles of stream with medium to high mineral potential and sixty-two percent of the stream miles within the entire subunit would be open to locatable minerals. Impacts to fish and aquatic resources in this alternative may be moderate with long-term (10 to 20 years) effects. This would result in decreased levels of fish populations and habitat condition at the local level. Based on the amount of potential disturbance, adverse impacts to fish and aquatic habitat under this alternative would be greater than under Alternatives A, B, and E, but less than Alternative D.

Effects from Recreation Management

Impacts would be similar in type to those discussed under Common to All Alternatives. In this Alternative, the Fortymile SRMA would contain 248,000 acres and have nine management zones. This alternative allows for increased development of visitor facilities, landscape modifications, and group size as compared to Alternative B and E. Alternative C has greater potential impacts than Alternative B and E. This alternative would provide more protection to fish and aquatic habitat than Alternative A and D, but less than B and E. Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Travel Management

In this alternative, OHV use is restricted to existing routes (off-road travel prohibited) and to vehicles weighing 1,500 GVWR and less (same as Alternative B). In this alternative, only six percent of the subunit would be designated as Semi-Primitive which prohibits the summer use of OHVs. Alternative C would provide less protection to fish and aquatic habitat than Alternative B and E, but more than Alternatives D and A. Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Special Designations

The effects from the Fortymile WSR designation are similar to those in Alternative A. In addition, the Fortymile ACEC would be established for the protection of caribou and Dall sheep habitats. This ACEC would close an additional 554,000 acres to entry, location, and leasing of minerals subject to valid existing rights. Fisheries and aquatic resources within the ACEC would benefit from mineral entry closure by limiting the adverse impacts from mining to valid and existing claims. In addition, the Plans of Operation requirement would entail the incorporation of specific fisheries rehabilitation measures. Outside of the Fortymile WSR Corridor, habitats would potentially benefit from the increased resource protection accompanying the special designation. This alternative would provide less protection to fisheries and aquatic resources than Alternative B and E, but more than Alternatives A and D.

4.4.1.2.4. Alternative D

Effects from Leasable Minerals

Under this alternative, 1.7 million acres would be open to fluid mineral leasing. Although lands would be open to fluid minerals (oil and gas) and solid minerals (coal) leasing, the limited potential exists for these resources within the subunit. Industry has shown no interest in leasing development in the Fortymile subunit. If leasing occurred, further NEPA analysis would be required. Based on the limited leasable mineral potential in the subunit, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or nonexistent. This alternative has the greatest potential to impact fish and aquatic resources because it has the greatest amount of acres open to disturbance.

Effects from Locatable Minerals

Approximately 1.7 million acres would be open to locatable minerals under this alternative (Map 30). Including valid existing federal mining claims, this alternative allows for an additional 900 stream miles to be opened to locatable minerals as compared to Alternative C (Table 4.8, “Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit”) and none of those stream miles would be within RCAs requiring a higher standard for reclamation. Under Alternative D, fisheries and aquatic resources open to locatable mineral entry would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis.

This alternative allows for the greatest number of stream miles and acres available for locatable minerals (Table 4.8, “Stream Miles and Acres Open to Locatable Mineral Entry, Fortymile Subunit”). Of the 3,000 miles of stream open to locatable minerals, 1,440 (forty-eight percent) stream miles occur within areas having medium to high mineral potential. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative D is estimated at up to 1,400 acres, or approximately 21 miles of stream over the life of the plan. Roughly 180 suction dredging operations are anticipated during the life of this plan. The amount of stream gravel disturbed from one suction dredging operation is estimated to be 2,000 cubic yards per year. Over the life of the plan 720,000 cubic yards of stream gravel could be disturbed.

Over 1,400 miles of stream with medium to high mineral potential and ninety percent of the stream miles within the entire subunit would be open to locatable minerals; impacts to fish and aquatic resources in this alternative may be moderate with long-term (10 to 20 years) effects. This would result in decreased levels of fish populations and habitat at local and potentially subunit levels. Based on the amount of potential disturbance, Alternative D would have the greatest potential for adverse impacts on fisheries and aquatic resources.

Effects from Recreation Management

Impacts would be similar in type to those discussed under “Common to All Alternatives.” In this alternative, the Fortymile SRMA would contain 248,000 acres and have 10 management zones. This alternative would allow for the greatest amount of visitor facility development and landscape modifications, while also authorizing the largest group size. This Alternative would provide more protection to fish and aquatic habitat than Alternative A, but less than E, B, and C.

Effects from Travel Management

This alternative limits OHVs to 1,500 GVWR and less and off-road travel would be allowed in ninety-seven percent of the subunit. Only three percent of the subunit would be designated as Semi-Primitive, which prohibits the summer use of OHVs. Trail proliferation would continue to occur with no established standards to ensure the proper construction and placement of new trails. Given the assumption of increased OHV use during the life of the plan, the unauthorized and unmanaged proliferation of trails would likely increase with a resulting increase in erosion and sediment impacts. Coupled with such a large area (ninety-seven percent of the subunit) open to off-road travel, this alternative could have minor long-term adverse impacts on fish and aquatic habitats. Alternative D has more potential to impact fish and aquatic resources than Alternatives E, B, and C, but less than Alternative A.

Effects from Special Designations

The effects from the Fortymile WSR designation are similar to those in Alternative A, except the “scenic” segments of the river would be recommended open to locatable minerals. In addition, the Fortymile ACEC (554,000 acres) would be established for the protection of caribou and Dall sheep habitats. The “wild” segments of the Fortymile WSR Corridor would be closed to locatable mineral entry and mineral leasing subject to valid existing rights, but the remainder of the ACEC would be open to locatable mineral entry subject to the SOPs and to mineral leasing subject to minor constraints. A mining Plan of Operations would be required on any mining activity within an ACEC (43 CFR 3809.11(c)(3)). Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact. Fish and aquatic habitat could potentially benefit from the increased resource protection within the ACEC. This alternative would provide less protection to fish and aquatic habitat than Alternatives E, B, and C, but more than Alternative A.

4.4.1.2.5. Alternative E (Proposed RMP)

Effects from Leasable Minerals

Under this alternative, 900,000 acres would be open to fluid mineral leasing. Although lands would be open to fluid minerals (oil and gas) and solid minerals (coal) leasing, the limited potential exists for these resources within the subunit. Industry has shown no interest in leasing development in the Fortymile subunit. If leasing occurred, further NEPA analysis would be required. Based on the limited leasable mineral potential in the subunit, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or nonexistent. This alternative has the greatest potential to impact fish and aquatic resources because it has the greatest amount of acres open to disturbance.

Effects from Locatable Minerals

Approximately 1.1 million acres would be open to locatable minerals under this alternative (Map 31). Including valid existing federal mining claims, this alternative would allow for 100 fewer stream miles to be opened to locatable minerals as compared to Alternative C. Under Alternative E, fisheries and aquatic resources open to locatable mineral entry would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis.

Of the 2,000 miles of stream open to locatable minerals, 1,400 (seventy percent) stream miles occur within areas having medium to high mineral potential. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative E is the same as described in Alternative B. The type and amount of impacts from suction dredging are the same as described in Alternative B.

Over 1,400 miles of stream with medium to high mineral potential and fifty-nine percent of the stream miles within the entire subunit would be open to locatable minerals; impacts to fish and aquatic resources in this alternative may be low to moderate with long-term (10 to 20 years) effects. All of the stream miles within RCAs in Alternative E are closed to locatables which means that the highest value fish and aquatic resources would likely remain intact and functioning in their current or natural state. Based on the amount of potential disturbance, Alternative E would have more potential adverse impacts to fisheries and aquatic resources than Alternatives A and B, and fewer impacts than Alternative C and D.

Effects from Recreation Management

Impacts would be similar in type to those discussed under Common to All Alternatives. In this Alternative, the Fortymile SRMA would contain 248,000 acres and have five management zones. The setting prescriptions for the five zones would remain the same as in Alternative C. This alternative allows for more development of visitor facilities, landscape modifications, and group size as compared to Alternative B, but less than A, C, and D. This alternative would provide more protection to fish and aquatic habitat than Alternative A, C, and D, but less than Alternative B. Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Travel Management

Impacts would be the same as described in Alternative A, with the following exceptions: Alternative E would remove the prohibition on motorboat, hovercraft, and airboat use on the non-navigable, “wild” segments of the Fortymile WSR. Those types of transportation generally have little impact on fish and aquatic resources. Based on these assumptions, this alternative could have moderate adverse short- and long-term impacts on fish and aquatic resources. This alternative has more potential to effect fish and aquatic habitat than Alternatives B, C, and D and the same potential as Alternative A.

Effects from Special Designations

The effects from the Fortymile WSR are similar to those in Alternative A. In addition, the Fortymile ACEC (362,000 acres) and Mosquito Flats ACEC (37,000 acres) would be established. These ACECs would be closed to mineral entry, location, and leasing of minerals subject to valid existing rights. A mining Plan of Operations would be required on any mining activity within the ACECs. Fish and aquatic resources within these ACECs would benefit from mineral entry closure by limiting the adverse impacts from mining to valid and existing claims. In addition, the Plans of Operation requirement would entail the incorporation of specific fisheries rehabilitation measures. Outside of the Fortymile WSR Corridor, habitats would potentially benefit from the increased resource protection accompanying the special designation. Special designations in Alternative E would provide the most protection to fish and aquatic resources of all the alternatives.

4.4.1.3. Invasive Species Fortymile Subunit

Summary of Effects

Use of BLM-managed lands consists primarily of placer and suction dredge mining, non-motorized and motorized recreation, and subsistence activities. Prevention of nonnative invasive species nonnative invasive species (invasive species) being introduced and spread in the planning area is discussed in section 4.3.1.5 and includes outreach and education of applicants and recreational and other users. Although the introduction and spread of invasive species would be reduced through mitigation, and outreach and education, effects could still occur. Plants are the nonnative invasive species most likely to be impacted and the analysis focuses on plants rather than nonnative invasive animals and pathogens.

Under all alternatives, surface-disturbing activities would increase the risk of the introduction and spread of invasive plants. Of the action alternatives, Alternative D would have highest potential for the introduction and spread of invasive plants and Alternative B would have the lowest potential. Early detection and rapid response (EDRR) and inventory and monitoring would further halt the introduction and spread of invasive plants.

Invasive plants can thrive in marginal habitats, such as compacted and dry soils and those contaminated by road treatments. Invasive plants can outcompete native vegetation at these sites and some can move into adjacent undisturbed sites, such as white sweetclover (*Melilotus officinalis* formerly *M. alba*) and orange hawkweed (*Hieracium aurantiacum*).

4.4.1.3.1. Effects Common to All Alternatives

In addition to the effects discussed as common to all subunits in section 4.3.1.5 the following effects would occur in the Fortymile Subunit.

Effects from Forest and Woodland Products

The management decisions for commercial timber sales would vary among the action alternative, however the impacts in all alternatives are expected to be the same. Commercial timber sales would be considered at the project level on lands open to sales. Demand for commercial timber in the subunit has been low and stipulations will assist in keeping the potential for introduction of invasive species low. No impacts to invasive plant management are expected from commercial timber sales under any alternative.

Personal use and commercial timber salvage sales would vary among the alternatives. Demand for personal use and salvage timber sales has been lacking and future demand is predicted to be little to none over the life of the plan. No impacts would be anticipated from these activities. Much of the area open to authorized activities is remote and costs of getting there and getting resources to markets would be prohibitive.

Demand for commercial forest products can be fairly high in the subunit, primarily for mushrooms after wildland fire. Commercial operations for harvest of mushrooms move from burn to burn, across the U.S. and Canada, increasing the potential for transport of invasive plants, as well as other nonnative species currently not found in Alaska. Burned areas, depending on the severity of the burn, provide favorable conditions for invasive plants to become established. Impacts from commercial mushroom harvest would be mitigated through stipulations to the permits and through education of the applicants on invasive species prevention practices.

Effects from Lands and Realty

Lands and realty actions resulting in ground disturbance, would increase the potential for invasive plants to become established. Vehicles and equipment used for construction and maintenance can import invasive plants and nonnative animals and pathogens to the disturbed area. The potential for introduction and spread of invasive plants from these actions would be expected to be significant. Impacts would be mitigated to the extent possible through permit stipulations and education and outreach efforts directed at applicants.

Utility corridors would be not designated under any alternative. Without corridor designations a web of rights-of-ways could be developed across the area. Corridors such as roads and trails act as conduits for the spread of invasive plants particularly where ground and canopy cover is removed. Invasive plants are able to become established in marginal conditions and dominate, suppressing the growth of native vegetation.

Effects from Salable Minerals

Although management decisions for salable minerals vary slightly by alternative impacts to invasive plant management are not expected to vary by alternative because the demand for salable minerals from BLM lands would be very low and would not vary by alternative. The percentage of the area open to salable minerals would range from forty-seven percent in Alternative B to one-hundred percent in Alternative A.

Material sites, including gravel pits, are often infested with invasive plants and substantial seed banks would be available in the materials. Invasive plants can easily spread to new areas with the contaminated mineral materials. Vehicles and equipment brought into the sites may also be contaminated with invasive plant seed. Gravel and other materials are generally mined from areas near the project and materials from these sites are likely to be used for road and highway maintenance along the Taylor Highway. Material sites would be inspected for invasive plants and seed, and treated as possible before being transported to project sites. Impacts to invasive plants from material sales would be mitigated as practicable through permit stipulations, outreach, and education.

Effects from Leasable Minerals

No impacts to nonnative invasive plant and animal species or pathogens would occur from leasable mineral exploration or development in the Fortymile Subunit. Due to lack of high potential oil and gas, coal, or oil shale resources on BLM lands, no activity is expected. Any exploration that might be proposed would require a permit and impacts would be mitigated through permit stipulations.

Effects from Recreation

Management of recreation areas through recreation setting character (RSC) classes largely set the stage for the level of protection or development afforded an area. The size and location of RMZs, and therefore RSC settings, change with each alternative and are reflected in the decisions for travel management and related activities. Impacts to invasive species are discussed under these other resource uses.

Effects from Travel Management

Interim alternatives for travel management for the action alternatives include a range of limits on OHV weights, permit requirements, designated trails and cross-country summer use. Limitations on OHV use would help prevent the introduction of invasive plants and aid EDRR efforts by concentrating use and reducing disturbance to native vegetation. Permitting use would provide opportunities to attach mitigation and to educate applicants on the threats from invasive plants and measures they can take to prevent spread of invasive plants.

In each alternative, a part or all of BLM lands within the Fortymile Subunit would be managed as limited to vehicles 1,500 pounds curb weight and less without a permit or approved Plan of Operations. The size of the affected area varies by alternative. Within Semi-Primitive RMZs, summer use of OHVs 1,500 pounds curb weight and less would be by permit. Use of OHVs over 1,500 pounds curb weight would require a permit in all areas. New transportation and utility systems (including airstrips) and relocation of existing roads may be authorized under certain conditions in all alternatives.

Motorized boat use would be allowed on the Fortymile WSR and would impact invasive plant management, rare plants, and fish and wildlife habitat. Motorized boats represent a threat because they could introduce aquatic and terrestrial invasive species, especially if the boats had been

launched in lakes and rivers that harbor invasive species. EDRR, outreach, and education would help mitigate introduction and spread of invasive species for uses which do not require permits.

4.4.1.3.2. Alternative A (No Action)

Effects from Lands and Realty

Right-of-way avoidance areas would not be created under Alternative A. Few rights-of-way would be anticipated under this alternative as lands would remain closed to new mineral entry.

Long-term camping (LTC) in the Fortymile WSR would be allowed in all but the “wild” segments of the river. Trampling and clearing of vegetation has occurred at long-term campsites permitted in the past and would be expected to increase if the number of active LTC permits increases. Impacts to invasive plants would be similar for any land disturbing action, which provide ideal seed beds for invasive plants to become established. Boats associated with use of the LTC could have similar impacts to those discussed as common to all subunits in section 4.3.1.5.1. Monitoring of LTC sites in all alternatives would help with early detection and rapid response to control any species during present or future management. Education and outreach efforts for LTC permit holders would help with prevention of invasive plants and other nonnative invasive animal and pathogen infestations.

Effects from Locatable Minerals

Under Alternative A, all BLM lands would remain closed to locatable mineral entry. Impacts to invasive plants would continue to occur at the current levels on valid existing mining claims. Mining results in removal of vegetation and overburden, and the potential for introduction and spread of invasive plants from these actions would be expected to be significant. Impacts would be mitigated as possible through permit stipulations and education and outreach efforts directed at applicants.

Effects from Travel Management

Within the Fortymile WSR Corridor, OHV use is limited to vehicles 1,500 pounds GVWR and less without a permit or approved Plan of Operations. Travel outside the corridor is not restricted and no OHV designations are in place. Potential for introduction and spread of invasive plants would be the greatest under Alternative A and impacts could be significant. Much of the use of motorized vehicles is recreational and as such would not require a permit, through which mitigation could be stipulated. EDRR, outreach and education, and larger scale control efforts would be used in an attempt to mitigate impacts.

4.4.1.3.3. Alternative B

Effects from Lands and Realty

Decisions in Alternative B would designate the Fortymile WSR Corridor and the Fortymile ACEC as right-of-way avoidance areas. The potential for introduction and spread of invasive plants would be reduced as a result. However, few rights-of-way are anticipated under this alternative. Land and realty actions would be evaluated at the project level. Impacts would be mitigated to the extent possible through permit stipulations and education and outreach efforts directed at applicants.

No LTC would be allowed on BLM lands in the Fortymile WSR Corridor. Some impacts to invasive plants would continue from LTC on state land, below ordinary high water. Monitoring of LTC sites in all alternatives would help with early detection and rapid response to control any species during present or future management.

Effects from Locatable Minerals

Under Alternative B, forty-seven percent of BLM lands would be open to locatable minerals. The mineral potential is high for substantial portions of the open areas, and large- and small-scale placer development would likely occur. Extraction practices for locatable minerals result in removal of vegetation and overburden from large areas, resulting in little or no fines to hold water and nutrients. Invasive plants tolerate marginal conditions and can more readily colonize these sites than native plants. Potential impacts to invasive plants management could be significant, but would be reduced by mitigation. Proposed mining operations would be analyzed for risk of invasive plants introduction and spread. Although stipulations on mining activity would include practices to reduce impacts from introduction and spread of invasive plants, some effects could still occur.

Effects from Travel Management

Alternative B offers the best protection against the introduction and spread of invasive plants by limiting summer use of OHVs 1,500 pounds curb weight and less on 1,459,000 acres (undesignated recreation area, Backcountry, Middlecountry, Frontcountry and Rural RMZs) to existing routes only, and requiring a permit for all but non-motorized and winter snowmobile use in the Semi-Primitive RMZs. Limiting motorized use to existing trails reduces disturbance from pioneering of new routes, which protects against pathways for new infestations. EDRR would be enhanced by concentration of OHV on trails. Where permits would be required, stipulations would reduce the threat of potential introductions of invasive plants. Other active management, including outreach and education at potential entry points could be used to mitigate impacts.

4.4.1.3.4. Alternative C

Effects from Lands and Realty

Long-term camping in the Fortymile WSR would have the same impacts as Alternative A.

Under Alternative C, there would be no right-of-way avoidance areas. Few rights-of-way would be anticipated under this alternative as most lands would remain closed to mineral entry. Impacts to invasive species would be minimal.

Effects from Locatable Minerals

Approximately seventy percent of BLM lands would be open to locatable minerals under Alternative C. The mineral potential is high for portions of the open areas. Impacts would be much the same as Alternative B, but with more acreage vulnerable to introduction of invasive plants. Mitigation of impacts would be the same as for Alternative B.

Effects from Travel Management

Alternative C differs from Alternative B in the location and size of the RMZs and that off-route travel for game retrieval would be allowed on ninety-four percent of BLM lands. The remaining six percent, the Semi-Primitive RMZ, would be closed to summer OHV use. The potential for

introduction and spread of invasive plants would increase in this alternative. Off-route travel for game retrieval would be concentrated during seasons when many of the weeds of concern will be in seed. Many of the OHV will come from outside the area, increasing the likelihood of introducing new invasive plant species to the area. EDRR, outreach and education, and larger scale control efforts would be used to try to mitigate impacts.

4.4.1.3.5. Alternative D

Effects from Lands and Realty

Consequences of realty actions for rights-of-way from Alternative D would be the same as Alternative A.

Long-term camping (LTC) would be allowed in all sections of the Fortymile WSR. Impacts to nonnative invasive plants (invasive plants) from this management prescription would be greatest in this alternative. Trampling and clearing of vegetation would continue to occur at sites permitted in the past. The number of permitted LTCs would be expected to increase depending on the gold market, and because the “scenic” segments of the river would be opened to new locatable mineral entry under this alternative. Impacts to invasive plants would be similar to other land disturbing actions, which provide ideal seed beds for invasive plants to become established. Education and outreach efforts for LTC permit holders would help with prevention of invasive plants and nonnative invasive animal and pathogen infestations.

Effects from Locatable Minerals

Under Alternative D, ninety-two percent of BLM lands would be open to locatable minerals. The mineral potential is high for portions of the open areas. Impacts would be much the same as Alternative B, but with more acreage vulnerable to introduction of invasive species. Mitigation of impacts would be the same as for Alternative B.

Effects from Travel Management

Alternative D differs from Alternative B in the location and size of the RMZs and that cross-country summer use of OHV 1,500 pounds curb weight and less would be allowed on ninety-seven percent of BLM lands. The Semi-Primitive RMZ (three percent) would be closed to summer OHV use. Of the action alternatives, Alternative D would have highest potential for the introduction and spread of invasive plants. Similar to other alternatives, EDRR, outreach and education, and control efforts would be used to try to mitigate impacts.

4.4.1.3.6. Alternative E (Proposed RMP)

Alternative E differs from Alternative C in that 10 watersheds would be managed as RCAs, more acres would be closed to leasable and locatable minerals (745,000 acres), commercial timber sales would not be considered in the ACECs, commercial use of forest products would be considered on all lands, personal use of timber would be allowed on all lands, interim travel management would be the same as Alternative A except that GVWR would be changed to 1,500 pounds curb weight for all lands, and motorized boats would be allowed on non-navigable wild segments of the WSR.

The impacts from the following programs or resources would be the same as Common to All or to Alternative B: commercial use of timber, personal use of timber, and fluid leasable minerals.

Effects from Lands and Realty

Long-term camping (LTC) would be allowed in all sections of the Fortymile WSR. Impacts to nonnative invasive plants (invasive plants) from this management prescription would be similar to Alternative D. Trampling and clearing of vegetation would continue to occur at sites permitted in the past. The number of permitted LTCs may increase depending on the gold market. Impacts to invasive plants would be similar to other land disturbing actions, which provide ideal seed beds for invasive plants to become established. Education and outreach efforts for LTC permit holders would help with prevention of invasive plants and nonnative invasive animal and pathogen infestations.

Effects from Travel Management

Potential for introduction and spread of invasive plants would be the greatest under Alternatives A and E. Impacts would be expected to be significant on the management of invasive plants and fish and wildlife habitat and rare plants. The cost and effort of control would be a significant burden on BLM and other land managers and owners.

Cross-country use of OHV would be allowed on all lands except no summer OHV use would be allowed in the Mosquito Flats ACECs in Alternative E. Much of the use of motorized vehicles is recreational and as such would not require a permit, through which mitigation could be stipulated. EDRR, outreach and education, and larger scale control efforts would be used in an attempt to mitigate impacts.

Limits on summer use of OHV in the Mosquito Fork ACEC would have positive impacts on invasive plant management in the ACEC since a major threat of introduction and spread would be eliminated. Motorized boat use would be allowed and would impact invasive plant management, rare plants, and fish and wildlife habitat. Motorized boats represent a threat because they could introduce aquatic and terrestrial invasive species, especially if the boats have been launched in lakes and rivers that harbor invasive species.

Aquatic and terrestrial invasive species could be introduced into more remote areas, by allowing motorized boats in the non-navigable segments of the WSR. This use would be largely recreation or in support of state suction dredge operations therefore no mitigation through permit stipulations would be possible. Over the life of the plan, this use could contribute to the introduction of invasive species, including aquatic species such as zebra mussels, Elodea and Eurasian watermilfoil, which would be expensive and difficult to control.

4.4.1.3.7. Cumulative Effects

Cumulative impacts would be similar among the alternatives but vary in extent of effect. Alternative A considered with the cumulative case would have the least impacts from mineral development since all BLM-managed lands would remain closed to minerals; however, cross-country summer use of OHV would likely threaten continued introduction of invasive species throughout the subunit. Alternative B would contribute least to cumulative effects since summer OHV use would be on existing trails and locatable and leasable minerals would be open on 43 percent of BLM-managed lands. Alternative C would provide a balance of management of invasive species while providing for multiple uses of BLM-managed lands (existing trails and 67 percent open to minerals). Alternative D would contribute the most to cumulative effects while allowing the most resource use. Impacts from Alternative E and the cumulative case would initially be similar to Alternative A in that the interim travel management plan would allow

cross-county summer OHV use. Disturbance from locatable and leasable minerals and therefore potential introduction of invasive species in Alternative E when combined with the cumulative case would be comparable to Alternative C.

Demand for recreational use is anticipated to increase over the life of the plan as populations in the state increase and as technological advancements in recreation equipment continue to occur. Currently placer mining is occurring on both valid federal mining claims and state mining claims in the Fortymile Subunit. Levels of placer mining would increase on BLM-managed lands as additional lands are opened to mineral entry through Alternatives B–E of this plan.

BLM-managed lands in the Fortymile Subunit are more interspersed among state and corporation lands than lands in the other subunits. Levels of mineral development, other development, and travel management on these adjacent lands when combined with alternatives allowing higher levels of mineral development and cross-country OHV use would be expected to increase introduction and spread of invasive species.

Decisions within Action Alternatives that would result in the greatest impacts on invasive species would also have the greatest cumulative impacts when considering the effects of changing climate in Interior Alaska. Longer frost free seasons and continued rises in temperature would allow some marginally adapted invasive species to become established. Invasive species that are established now would be expected to continue to expand, particularly to the north, along vectors of spread (waterways, roads and trails).

4.4.1.4. Soil and Water Resources Fortymile Subunit

Summary of Effects

Because much of the Fortymile Subunit is underlain by permafrost, even relatively minor surface disturbances can lead to long-term adverse impacts to soil and water resources. A variety of decisions in the action alternatives protect soil and water resources including proposed RCAs to protect fish habitat, proposed ACECs, WSRs, and RMZs, as well as weight restrictions for OHVs. On the other hand, surface disturbance associated with locatable mineral development, recreation development, and increased OHV travel activities would likely result in varied adverse impacts to soil and water resources.

There is reasonable likelihood of increased development associated with locatable minerals in the Fortymile Subunit, though much of the activity may be centered in previously disturbed placer-mine areas. Generally, the potential for direct adverse impacts increases sequentially from Alternative A to Alternatives B and E, Alternative C, and Alternative D. Appropriate stipulations and SOPs for soil and water resources would be implemented to ensure that long-term adverse impacts would be minimized or avoided.

Additional impacts beyond those discussed under 4.3.1.5.1 Effects Common to All Alternatives, are discussed in the following sections.

4.4.1.4.1. Alternative A (No Action)

Effects from Locatable Minerals

The Fortymile Subunit is closed to new locatable mineral entry. Approximately 10,000 acres of valid federal claims exist, with mining presently occurring on some of these claims. Projected

locatable minerals activity for Alternative A includes six suction dredge operations per year, 27 small-scale placer mines, and two large-scale placer mines (section 4.2.1.3.4). An estimated 700 to 1,000 acres would be disturbed, with much of the disturbed areas having been previously worked by recent or historic mining operations—placer mining has occurred throughout much of the Fortymile area since the late 1800s.

It is unlikely extensive additional access roads would need to be constructed to reach known mineral deposits. Nonetheless, impacts to soil and water resources could result through increased activity on current mining claims. Impacts to soil and water resources from authorized mining operations would be reduced through site-specific analysis of subsequent authorizations.

Effects from Recreation

Under Alternative A the Fortymile WSR Corridor (249,000 acres) would continue to be managed as an SRMA. Facility enhancements such as roads, toilets, boat ramps, and parking areas, may be added to accommodate increasing recreation demand. These enhancements would likely have limited negative impacts on soil and water resources. All public lands outside of the Fortymile WSR Corridor would be managed the same as other BLM lands. Recreation user activities outside of the SRMA may have increased impacts to resources because of limited oversight. Under Alternative A, no substantial disturbance of soils or impacts to water quality would be expected unless there were a substantial increase in development or recreation use levels.

Effects from Travel Management

Travel within the Fortymile WSR Corridor would be limited to vehicles with a GVWR of no more than 1,500 pounds. The use of larger motorized vehicles within the corridor could be permitted on a project-specific basis. Impacts to soil and water resources would vary depending on the size of vehicle, season of travel, and the number of trips; but would be mitigated through stipulations on proposed projects. Travel on BLM-managed lands outside of the WSR corridor is currently unrestricted. With no OHV designation in place for lands outside of the WSR corridor, Alternative A may result in detrimental impacts to soil resources and watersheds from proliferation of user-created trails, subsequent soil erosion, and increased siltation in streams.

4.4.1.4.2. Alternative B

Effects from Locatable Minerals

Impacts to soil and water resources from locatable minerals would be greater under Alternative B than Alternative A because new areas would be opened to placer mining activity with subsequent construction of roads and/or staging areas to work selected areas. Under Alternative B, 800,000 acres of withdrawn lands would be recommended open to locatable mineral entry. Impacts to soil and water resources from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. An estimated 10 suction dredge operations, 31 small-scale placer mines, and three large-scale placer mines would be developed within the Fortymile Subunit during the life of the plan. Each suction dredging operation would typically have a camp with a footprint of less than one acre. Impacts from suction dredge camps are anticipated to be less than 10 acres annually. Total expected surface disturbance from projected small- and large-scale placer mine operations would be 620 to 930 acres.

Placer mine operations utilizing heavy equipment have the potential to adversely impact soil resources and water quality through erosion, unintended discharge of sediment laden water,

and subsequent increased downstream turbidity. Depending on the methods used and size of operation, mining operations could adversely impact the natural water quality and flow characteristics of selected river segments. Disturbance to soil and water resources from a particular mining operation would be reduced through SOPs and the site-specific analysis of subsequent authorizations.

Approximately 1,076,000 acres would be closed to locatable mineral entry, including the Fortymile WSR Corridor, the Fortymile SRMA, and the Fortymile ACEC, providing additional protection to soil and water resources in these areas.

Effects from Recreation

The Fortymile SRMA would be substantially larger (792,000 acres) than under Alternatives C and D. Most of the SRMA would be managed for Semi-Primitive and Backcountry settings (Maps 44, 45, and 46), with minimal facility development. Non-SMRA lands would be about 1,284,000 acres. Use of trails, picnic and camping areas, and facilities would likely result in moderate soil disturbance and limited impacts to water quality because these are low impact activities.

Effects from Travel Management

Alternative B would establish OHV designations and eliminate unrestricted use of OHVs. All OHVs would be restricted to curb weights of 1,500 pounds or less (including snowmobiles). No summer OHV use would be allowed within the Semi-Primitive RMZ, which includes the “wild” segments of the Fortymile WSR. Summer OHV use would be limited to existing trails in the remainder of the subunit, including portions of the WSR corridor and the Backcountry RMZ (Map 44).

No substantial adverse impacts to soil or water resources are expected under Alternative B because measures to reduce impacts to soil and water resources include trail maintenance on existing authorized trails, summer OHV use restrictions, and OHV weight restrictions.

4.4.1.4.3. Alternative C

Effects from Locatable Minerals

Under Alternative C, 1,253,000 acres would be open to locatable minerals. Placer gold potential is high for portions of the lands that would be opened and new development would likely occur in some areas. Projected locatable mineral development includes; 14 suction dredge operations, 33 small-scale placer mines, and three large-scale placer mines. Soil disturbance from suction dredge camps are anticipated to be less than 10 acres annually. Total expected surface disturbance from projected small- and large-scale placer mine operations would be 800 to 1,100 acres. Impacts on soil and water resources would vary depending on the methods used, the size of operation, and the number of mines as discussed under Alternative B. Compared to Alternative B, more acres would be open to mineral development, consequently there would be greater potential for adverse impacts to soil and water resources. Based on expected area of disturbance, adverse impacts to soil and water resources, would generally be progressively greater for Alternative A, B, C, then D. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects from Recreation

Under Alternative C the Fortymile WSR Corridor (249,000 acres) would be managed as SRMA (Maps 44, 45, and 46). Compared to Alternative B, the SRMA acreage would decrease by 543,000 acres, hence less acres would be managed to maintain Semi-Primitive or Backcountry settings. Since the area managed as an SRMA would decrease, the potential for adverse impacts to soil and water resources from recreation users would increase because of less restrictive management oversight.

Effects from Travel Management

Alternative C allows summer OHV use on more acres than Alternative B. All OHVs, including snowmobiles, would be restricted to a curb weight of 1,500 pounds or less. Summer OHV use would be limited to existing trails in about ninety percent of the subunit, including some segments of the WSR corridor and the Backcountry RMZ. Compared to Alternative B, impacts to soil and water resources would be somewhat greater for this alternative, primarily because of the increased acreage open to summer OHV use.

4.4.1.4.4. Alternative D

Effects from Locatable Minerals

Compared to other alternatives, Alternative D would likely result in the greatest disturbance to soil resources and adverse impacts to water quality. Approximately 1,713,000 acres would be open to locatable minerals. Projected development includes; 18 suction dredge operations, 40 small-scale placer mines, and three large-scale placer mines with an estimated total disturbance of 900 to 1,300 acres. Impacts to soil and water resources would vary depending on the development methods used, the size of operation and the number of mines as discussed under Alternative B. Since more acres would be open to mineral development under Alternative D than other alternatives, there would be a greater potential for adverse impacts to soil and water resources. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects from Recreation

Effects to soil and water resources would be similar to Alternative C based on the amount of potential disturbance. Approximately 249,000 acres would be managed as SRMA and 1,827,000 acres managed as other BLM lands (Maps 44, 45, and 46).

Effects from Travel Management

Similar to Alternatives B and C, all OHVs would be restricted to a curb weight of 1,500 pounds or less including snowmobiles. However, Alternative D differs in that cross-country summer use of OHVs would be allowed on all but 54,000 acres of the Semi-Primitive Zone. Since Alternative D would increase the acreage open to summer OHV travel compared to other alternatives it would have the greatest potential for direct and indirect adverse impacts to soil and water resources associated with OHV use.

4.4.1.4.5. Alternative E (Proposed RMP)

Alternative E is intended to provide a mix of land management actions that best satisfies issues and concerns in consideration of all values and programs and adopts a blend of actions that would balance moderate development with protection of the environment.

Effects from Locatable Minerals

Under Alternative E, 745,000 acres would be open to new locatable mineral entry encompassing about 1,500 stream miles. Placer gold potential is high for portions of the lands that would be opened and new development would likely occur. Areas closed to mineral entry include the Fortymile WSR, the proposed Fortymile ACEC, the proposed Mosquito Flats ACEC, within one mile of ungulate mineral licks, the BLM's administrative site, historic Ft. Egbert, and the Eagle recreation withdrawal.

Projected locatable mineral development includes; 14 suction dredge operations, 33 small-scale placer mines, and 3 large-scale placer mines. About fifty percent of the 3,393 stream miles within the subunit would be open to locatable mineral development. Surface disturbance from suction dredge camps are anticipated to be less than 10 acres annually. Surface disturbance from projected small- and large-scale placer mine operations is estimated to be a rotating average of about 1,000 acres per year, with ongoing reclamation of previously disturbed areas and subsequent new disturbance from active operations.

Placer mine operations utilizing heavy equipment have the potential to adversely impact soil resources and water quality through erosion of disturbed soils, periodic discharge of sediment laden water, and subsequent increased downstream turbidity. Depending on the methods used and size of operation, mining operations could adversely impact the natural water quality and flow characteristics of selected river segments. Impacts from the various types of mining operations are described in section 4.3.1.6.

Based on the amount of projected surface disturbance, Alternative E would have more potential adverse impacts to soil and water resources than Alternative A, would have similar impacts to Alternative B, and fewer impacts than Alternative C and D. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects from Recreation

Effects under Alternative E would be the same as Alternative C in terms of the numbers of the size of the Fortymile SRMA and acres devoted to Semi-Primitive, Backcountry, Middlecountry, Frontcountry, and Rural RMZs, with the exception that there would be only five RMZs. This alternative allows for more development of visitor facilities, landscape modifications, and group size as compared to Alternative B, but less than A, C, and D.

The overall result is that the potential for adverse effects on soil and water resources under Alternative E relative to Alternative C would be the same, but would be more than Alternative B, and less than Alternative D. Potential impacts to soil and water resources from recreation actions are expected to be mitigated through application of SOPs and site-specific analysis of authorizations.

Effects from Travel Management

Alternative E allows for a Travel Management Plan to be developed for the Fortymile subunit after approval of the RMP. Interim management would be the same as Alternative A, with a few exceptions, including a decrease in the weight limits of summer and winter OHVs in certain portions of the Subunit, a removal of the prohibition of motorboat use in "wild" segments of the Fortymile Wild and Scenic River corridor, and implementation of a summer restriction on OHV use in the proposed Mosquito Flats ACEC.

Under Alternative E, open cross-country travel on BLM lands is restricted to summer motorized vehicles with 1,500 pounds curb weight or less and a width of 64 inches or less and winter motorized vehicles with 1,000 pounds curb weight or less and 50 inches in width or less outside the Fortymile Wild and Scenic River corridor. Allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes and may impact soil by disturbing vegetation and by clearing of travel routes, potentially resulting in increased erosion and sedimentation.

OHV use within the Fortymile Wild and Scenic River corridor is limited to existing trails and winter use by vehicles with 1,000 or less curb weight and a width of 50 inches and summer motorized vehicles weighing up to 1,500 pounds curb weight and a width of up to 64 inches. The Fortymile ACEC (362,000 acres) and the Mosquito Flats ACECs (37,000 acres) limits use to winter only with motorized vehicles weighing up to 1,000 pounds curb weight and 50 inches in width without a permit. Summer motorized use may be allowed by permit only. Limiting OHV weights would likely benefit soil and water resources by decreasing erosion of soils disturbed by heavier OHVs and potentially decreasing sedimentation in nearby waters.

4.4.1.5. Visual Resources Fortymile Subunit

Summary of Effects

VRM Classes outline the level of change that could occur within that class. Identifying an area as a specific management class does not guarantee that change will take place. The discussion below identifies the number of acres that may retain or lose visual quality due to management in a specific VRM Class; however, the potential for every acre to lose visual quality due to management in a specific VRM Class is extremely low. The analysis logically assumes that areas designated as VRM Class III and IV objectives would permit more surface-disturbing impacts and potentially have greater adverse impacts on visual resources and scenic quality than those areas designated as VRM Class I and II objectives.

In addition to those impacts discussed under section 4.3.1.9 Impacts Common to all Subunits, the following impacts may occur in the Fortymile Subunit. The results of the Visual Resources Inventory are in Appendix D, *Visual Resource Inventory*.

Alternatives — VRM Management Class Designations		VISUAL RESOURCES INVENTORY CLASS DESIGNATION							
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV	
		145,000	7%	1,878,000	90%	6,000	1%	47,000	2%
Alternative A ^a	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	145,000	145,000	7						
VRM II	103,000			103,000	5				
VRM III									
VRM IV									
Total	248,000	145,000	7	103,000	5				
Alternative B	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	144,000	144,000	7						
VRM II	970,000			968,000	47			3,000	<1
VRM III	4,000			3,000	<1			800	<1
VRM IV	957,000			907,000	44	6,000	<1	44,000	2
Total	2,076,000	145,000	7	1,878,000	90	6,000	<1	47,000	2
Alternative C	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	144,000	144,000	7						

VRM II	452,000	300	<1	452,000	22				
VRM III	0								
VRM IV	1,480,000			1,426,000	69	6,000	<1	47,000	2
Total	2,076,000	145,000	7	1,878,000	90	6,000	<1	47,000	2
Alternative D	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	144,000	144,000	7						
VRM II	0								
VRM III	100,000			100,000	5				
VRM IV	1,832,000	300	<1	1,778,000	86	6,000	<1	47,000	2
Total	2,076,000	145,000	7	1,878,000	90	6,000	<1	47,000	2
Alternative E	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	144,000	144,000	8	3	<1				
VRM II	731,000	50	<1	728,000	39			3,000	<1
VRM III	11,000			11,000	1				
VRM IV	992,000	300	<1	942,000	50	6,000	<1	44,000	2
Total	1,878,000	145,000	8	1,681,000	90	6,000	<1	47,000	2

^aOnly 12% of BLM lands have assigned VRM Classes in Alternative A. The Fortymile WSR Corridor is Class I and II.

4.4.1.5.1. Alternative A (No Action)

Under continuation of current management, visual resources would be managed on a project-specific basis, outside of the designated wild river corridor (BLM Manual 8351), as no other visual resource management classes have been established. Visual resources would be protected through the use of management class inventory objectives and the visual contrast rating process.

Effects from Cultural Resources

Impacts from stabilization and maintenance efforts on cultural sites in the Fortymile subunit have the potential to impact visual resources by removal of vegetation and excavation at each site. The browns of disturbed soils and the natural revegetation process would continue to impact color for the long-term. Texture contrasts between soils and adjacent vegetation would also be impacted long-term. Replacement of roofing or other materials on historic structures could contrast with existing color and texture by introducing new materials where weathered materials exist.

Effects from Visual Resources

Under Alternative A, of VRI Class I acres (seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of the designated “wild” segments of the Fortymile WSR. These lands have an A rating for scenic quality, a high sensitivity, and occur in the Foreground-Middleground Zones. Additionally, of VRI Class II lands (ninety percent), six percent would be managed as VRM Class II allowing a low level of change. These lands are the designated “scenic” and “recreational” segments of the Fortymile WSR and have an A rating for scenic quality, a high sensitivity, and occur in the Foreground-Middleground zones. The remaining ninety-four percent would remain unclassified. Less than one percent of BLM lands had a VRI Class III, while two percent had a VRI Class IV.

Effects from Travel Management

The restriction of motorized use to OHVs weighing 1,500 pounds GVWR and less without permit within the Fortymile WSR Corridor helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape. However,

impacts will occur to vegetation and soils, resulting in changes to line from repeated travel or the creation of user routes. Color will change from the various hues of diverse vegetation to a more uniform grass cover or even browns of disturbed soils of from the construction of trails. Form will change by the removal of larger woody materials along the travel route and texture will change due to the removal of vegetation and the exposure of soils.

The use of larger motorized vehicles within the Fortymile WSR Corridor may be allowed under permit. The impacts from this travel would vary depending on the size of vehicle, season of travel, and the number of passes made.

Travel on other lands outside the Fortymile WSR Corridor is unrestricted and may impact visual resources by disturbing primarily vegetation by repeated passes and by clearing travel routes. These actions result in changes to color from various hues of green vegetation to a more brown color of disturbed soils. Changes in line result from clearing vegetation for easier travel resulting in a straight line instead of a predominately irregular landscape. Changes to texture occur from the removal of vegetation for travel routes, the disturbance of vegetation and resulting soils and the possible introduction of materials for surfacing hardening in an otherwise natural landscape. Unrestricted travel impacts 1,827,000 acres.

Major impacts on visual resources from new airstrips, if authorized, include changes in color, line, form and texture on the landscape. The removal of vegetation, which in turn results in soil exposure, creates a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line of the airstrip. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a cleared soil area. The excavation or removal of soil to create a level landing area may impact form by creating a flat horizontal line on the landscape.

4.4.1.5.2. Alternative B

In general, Alternative B anticipates the lowest level of resource development and adopts VRM classes that would be the most restrictive to development.

Effects from Cultural Resources

Impacts from stabilization and maintenance of sites would have the same impacts as Alternative A. Impacts to visual resources from creating seven public use areas (approximately 35 acres) would include changes in vegetation through the creation of trails, picnic and camping areas associated with increased use. Changes to line, form and color would result in contrast between exposed soils and adjacent vegetation.

Effects from Fish and Aquatic Species

Under Alternative B, Sam Patch Creek (Map 6) has been identified as a High Priority Restoration Watershed and would be emphasized for restoration and/or protection. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on disturbed areas within the 29,000-acre watershed. Lands within the High Priority Restoration Watershed were inventoried as a class II and all lands will be managed as VRM Class II.

There are 11 Riparian Conservation Areas (RCAs) identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 205,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands one-hundred percent or (73,000 acres) would be managed as Class I retaining the natural appearance of the landscape. Of VRI Class II lands, eighty-eight percent or 115,000 acres would be managed as Class II while twelve percent or 16,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands (569 acres) one-hundred percent would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands one-hundred percent (150 acres) would be managed as Class III lands allowing some preservation of the existing visual character of these lands.

Effects from Visual Resources

Under Alternative B, of VRI Class I, 144,000 acres (seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of the designated “wild” segments of the Fortymile WSR. These lands have an A rating for scenic quality, a high sensitivity and occur in the Foreground-Middleground Zones. This is the same as Alternative A.

Of VRI Class II lands (ninety percent or 1,878,000 acres), fifty-one percent (968,000 acres) would be managed as VRM Class II allowing a low level of change. These lands include the designated “scenic” segments of the Fortymile WSR and other lands within the Fortymile SRMA, having an A rating for scenic quality, a high sensitivity, and occurring in the Foreground-Middleground Zones. Less than one percent (3000 acres) of VRI Class II lands would be managed as VRM Class III including “recreational” segments of the Fortymile WSR, potentially resulting in only partially retention of landscape characteristics, while forty-eight percent (907,000 acres) of VRI Class II lands would be managed as VRM Class IV, potentially resulting in a high level of change to the characteristic landscape. These lands are outside the Fortymile SRMA, have high and medium sensitivity, and occur in all three distance zones.

Less than one percent of BLM lands had a VRI Class III (6,000 acres) and one-hundred percent of these lands would be managed as VRM Class IV, potentially resulting in a high level of change to the landscape characteristics. Many of these lands are located outside the Fortymile SRMA.

Only two percent of BLM lands had a VRI Class IV (47,000 acres). Of VRI Class IV lands five percent or 3000 acres would be managed as VRM Class II allowing a low level of change to the characteristic landscape. These acres are associated with the Fortymile SRMA. Approximately two percent (838 acres) would be managed as VRM Class III potentially resulting on only partially retention of the characteristic landscape. These acres are also associated with the Fortymile SRMA. The remaining ninety-three percent (44,000 acres) would be managed as VRM Class IV potentially resulting on a high level of change to the characteristic landscape. These VRM Class IV lands are located outside the Fortymile SRMA.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance, and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources regardless of VRM Class.

Effects from Wilderness Characteristics

Under Alternative B, wilderness characteristics will be maintained on 994,000 acres (forty-nine percent), including lands within the Fortymile ACEC and Fortymile WSR segments that do not contain mining claims, including limiting activities that impact the appearance of naturalness.

Of VRI Class I lands (122,000 acres) one-hundred percent would be managed as class II allowing a low level of change to the landscape. Of VRI Class II lands, one-hundred percent or 870,000 acres would be managed as Class II. No lands were identified as VRI Class III lands. Of VRI Class IV lands one-hundred percent (3,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Forest and Woodland Products

Under Alternative B personal use of timber, timber salvage sales, commercial timber sales, and commercial use of forest products (e.g., mushrooms, berries) would not be authorized within the Fortymile WSR Corridor, the Eagle Recreational withdrawal, and the Fort Egbert Historic Site. Temporary camps and various impacts from different harvest techniques would not impact 249,000 acres. These management actions would help protect visual resources.

These activities would be considered on the remainder of the subunit, 1,827,000 acres. Temporary camps and various impacts from different harvest techniques could occur on these lands. Timber and firewood harvest activities can primarily impact line, form, color, and texture. The size and scope of impacts would depend on the size of the area and harvest techniques used. Few timber sales are anticipated during the life of the plan due to limited access and lack of commercially valuable timber. Impacts from timber and forest product harvest are discussed in section 4.3.1.9 Effects Common to All Subunits.

Effects from Land and Realty

Under Alternative B, long-term camping for commercial purposes (i.e., camping in association with mining on state mining claims adjacent to BLM lands) in the “wild,” “scenic,” or “recreational” segments of the Fortymile WSR Corridor would not be allowed on BLM-managed lands, but could occur below ordinary high-water on state lands. Visual impacts to line, color and texture from temporary long-term camps, generally less than one acre in size, would no longer occur on approximately 248,000 acres.

Within the Fortymile WSR Corridor and the Fortymile ACEC, rights-of-way would generally not occur if other suitable locations are available. This would protect visual resources by not allowing clearance of vegetation and structures associated with different kinds of rights-of-way activities, maintain a natural landscape in line, form, color and texture on approximately 924,000 acres.

Effects from Fluid Leasable Minerals

Approximately 1,100,000 acres would be closed to fluid leasable minerals, including the Fortymile WSR Corridor, the Fortymile SRMA, the Fortymile ACEC, ungulate mineral licks, all disposal lands, BLM Administrative sites, and the Fort Egbert and Eagle recreation withdrawals. In addition 2,000 acres of split-estate lands would be open to fluid mineral leasing subject to major constraints such as no surface occupancy. These actions would protect visual resources.

Approximately 974,000 acres would be open to leasing. If exploration occurred, which is not anticipated, it could result in impacts such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture.

No lands were identified as VRI Class I lands. Of VRI Class II lands, one percent or 13,000 acres would be managed as Class II, while ninety-nine percent (892,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 43,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Approximately 1,100,000 acres would be closed to solid leasable minerals, including the same areas described as closed under Fluid Leasable Minerals above. Visual resources would not be impacted by mining solid leasable minerals on these lands.

Impacts to visual resources by exploration, development and production of solid leasable mineral resources on the remaining 976,000 acres would depend on the scale of the action and the number of mineral sites mined. However, it is assumed that no solid mineral exploration, leasing, or development would occur during the life of the plan.

Effects from Locatable Minerals

Under Alternative B, 1,100,000 acres would be closed to locatable mineral entry, including the Fortymile WSR Corridor, the Fortymile SRMA, the Fortymile ACEC, ungulate mineral licks, all disposal lands, BLM Administrative sites, and the Fort Egbert and Eagle recreation withdrawals. Visual resources would not be impacted by mining locatable minerals on these lands.

Approximately 976,000 acres would be open to mineral entry. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines.

Large-scale placer mining (semi-mobile plant) operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. It is anticipated that the subunit would have up to three large-scale placer mine operations. Each operation would have a disturbed annual footprint of approximately 36 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 60 to 80 acres of disturbance. Impacts from all three operations would impact between 180 to 240 acres over the life of this plan.

The subunit is anticipated to have up to 31 small-scale placer mine operations. Operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 20 to 30 acres of disturbance. Impacts from all 34 operations would impact between 620 to 930 acres over the life of this plan.

Approximately 10 suction dredge operations are anticipated to occur in this subunit. Each operation would have a camp with a footprint of less than one acre over the life of the mine which is anticipated to be between 10 to 20 years. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from suction dredge camps are anticipated to be less than 10 acres annually over the life of this plan.

Mineral Exploration activities with resulting camp and field sampling would impact visual resources on between six to 104 acres annually. Reclamation would generally occur annually

with the only impacts to visual resources from camps. Up to two exploration operations may occur over the life of this plan.

No lands were identified as VRI Class I lands. Of VRI Class II lands, one percent or 13,000 acres would be managed as Class II, while ninety-nine percent (892,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 43,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Approximately 246,000 acres would be closed to salable minerals, including “wild” and “scenic” segments of the Fortymile WSR Corridor and a one mile radius around ungulate mineral licks. Visual resources would not be impacted by mineral material sales in these areas.

The remaining 1,830,000 acres would be open. The impacts from the extraction of salable minerals would vary depending on the methods used and size of operation. Large mining operations would have the greatest impact to visual resources impacting line, form, color, and texture of mined areas, with the removal of vegetative cover and stockpiled materials creating form contrast between the mined areas and the stockpiled materials and the background landforms. Mining and material stockpiles would also create color contrast between the greens of vegetation and the browns of soils. Texture would change from a natural medium, subtle texture of vegetation to a course, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and disturbed landscape could occur.

While most of the subunit is open to salable minerals it is anticipated that only 200 acres would be mined within the planning area and of that 200, approximately 100 acres would be mined within this subunit. Mining activities for salable minerals would generally occur along roads due to transportation requirements.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape

Of VRI Class I lands (145,000 acres) less than one percent would be managed as Class II allowing a low level of change to the landscape while all other VRI Class I would be managed as Class I. Of VRI Class II lands (644,000 acres) less than one percent would be managed as Class III allowing some level of change to the landscape while other VRI Class II would be managed as Class II. No lands were identified as VRI Class III lands. Of VRI Class IV lands (3,000 acres), eighty-five percent would be managed as Class II lands resulting in preservation of the existing visual character of these lands while twenty-four percent (837 acres) would be managed as Class III lands resulting in some preservation of the existing visual character of these lands.

Under this alternative areas classed Semi-Primitive and associated with the wild river corridor would be managed as VRM Class I (144,000 acres). Semi-Primitive, but not associated with the wild river corridor and Backcountry Recreation Management Zones (RMZ) would have a VRM Class II (644,000 acres), Middlecountry, Frontcountry, and Rural RMZs would have a VRM Class III (4,000 acres), and all other BLM lands would have a VRM Class IV (1,284,000 acres).

Effects from Travel Management

Travel management for other BLM Lands outside the SRMA

The restriction of winter motorized use to OHVs weighing 1,000 pounds curb weight and less helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 1,284,000 acres. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Summer travel by OHVs weighing 1,500 pounds curb weight and less are allowed on existing routes only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened existing routes. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. These management activities help protect the visual resources on 1,284,000 acres.

The use of larger vehicles could be allowed by permit. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described under section 4.3.1.9 Effects Common to All Subunits, Visual Resources except on a larger scale.

Travel management within the SRMA

Common to All Zones

The restriction of winter motorized use to OHVs weighing 1,000 pounds curb weight and less without permit would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation.

Semi-Primitive Zones

The restriction of summer motorized use to OHVs weighing 1,500 pounds curb weight and less within the Semi-Primitive RMZs (includes the "wild" segments of the Fortymile WSR) to permit would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 617,000 acres.

All Other Zones

The Backcountry, Middlecountry, Frontcountry, Rural Zones (including the “scenic” and “recreational” segments of the Fortymile WSR) would limit summer motorized use to OHV weighing 1,500 pounds and less curb weight on existing routes only. This would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 175,000 acres.

All other vehicle use would be by permit within the entire SRMA. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described under Common to All Travel Management except on a larger scale.

Effects from Special Designations

Under Alternative B, 732,000 acres would be designated as the Fortymile ACEC to protect habitat for the Fortymile caribou herd and Dall sheep habitat. The entire ACEC will remain closed to entry, location, and leasing of minerals subject to valid existing rights. Management decisions to protect wildlife habitat helps to preserve the visual character of the area.

Of VRI Class I lands (55,000 acres) one-hundred percent would be managed as Class I. Of VRI Class II lands ninety-nine percent or 675,000 acres would be managed as Class II, while one percent (4,000 acres) would be managed as Class IV allowing visible change to the landscape. No lands were identified as VRI Class III lands. Of VRI Class IV lands one-hundred percent (2,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Approximately 1,300 acres associated with Gold Run would be maintained as a natural landscape under the eligibility as a “wild” river and would be assigned a VRM Class I. Approximately 1,300 acres associated with Dome Creek would be maintained as a natural landscape under the eligibility as a “recreational” river and would be assigned a VRM Class III. “Wild” are essentially primitive and undeveloped. “Recreational” rivers are readily accessible and may have some development along their shorelines. Management decisions to preserve these characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform on a scale of development from “wild” to “recreational.”

4.4.1.5.3. Alternative C

In general, Alternative C anticipates a moderate level of resource protection, use and enhancement of resources and adopts VRM classes that would allow a range of development and still protect visual resource in certain areas.

Effects from Cultural Resources

Same as Alternative B.

Effects from Fish and Aquatic Species

Same as Alternative B, Sam Patch Creek (Map 6 has been identified as a High Priority Restoration Watershed and would be emphasized for restoration and/or protection. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface

disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on any disturbed areas within the 29,000-acre watershed.

Of VRI Class II lands, twenty-eight percent or 8,000 acres would be managed as Class II while seventy-two percent or 21,000 acres would be managed as Class IV lands. No lands were identified as VRI Class I, III or IV lands.

There is one RCA identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 569 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation. Of VRI Class III lands one-hundred percent would be managed as Class IV allowing a visible level of change to the landscape. No lands were identified as VRI Class I, II or IV lands.

Effects from Visual Resources

Under Alternative C, all VRI Class I, 144,000 acres (seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of the designated “wild” segments of the Fortymile WSR. These lands have an A rating for scenic quality, a high sensitivity, and occur in the Foreground-Middleground Zones. This is the same as Alternatives A and B.

Of VRI Class II lands (ninety percent or 1,878,000 acres), twenty-four percent (452,000 acres) would be managed as VRM Class II allowing a low level of change. These lands are designated “scenic” segments of the Fortymile WSR, having an A rating for scenic quality, a high sensitivity, and occurring in the Foreground-Middleground Zones. Approximately seventy-six percent (1,426,000 acres) of VRI Class II lands would be managed as VRM Class IV, potentially resulting in a high level of change to the characteristic landscape. These lands include the “recreational” segments of the Fortymile WSR and all lands outside the Fortymile SRMA and have an A rating for scenic quality, both high and medium sensitivity and occur in all three distance zones.

Less than one percent of BLM lands had a VRI Class III (6000 acres) and one-hundred percent of these lands would be managed as VRM Class IV, potentially resulting in a high level of change to the landscape characteristics. Most of these lands are located outside the Fortymile SRMA.

Only two percent of BLM lands had a VRI Class IV (47,000 acres) and one-hundred percent of these lands would be managed as VRM Class IV potentially resulting on a high level of change to the characteristic landscape. These VRM Class IV lands are located outside the Fortymile SRMA.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance, and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Under Alternative C, wilderness characteristics would be maintained on 487,000 acres (twenty-four percent) within some sections of “wild” segments of the Fortymile WSR. Activities that impact the appearance of naturalness would be limited.

Of VRI Class I lands (122,000 acres) one-hundred percent would be managed as Class I retaining the natural appearance of the landscape. Of VRI Class II lands, one-hundred percent or 365,000 acres would be managed as Class II. No lands were identified as VRI Class III or IV lands.

Effects from Forest and Woodland Products

Under Alternative C, personal use of timber and commercial use of forest products would not be authorized within “wild” segments of the Fortymile WSR Corridor, the Eagle Recreational withdrawal, and the Fort Egbert Historic Site. Temporary camps and various impacts from different harvest techniques would not impact 146,000 acres. These management actions would help protect visual resources.

Timber salvage sales would be considered throughout the subunit (2,077,000 acres). The size and scope of impacts would depend on the size of the area and harvest techniques used. Temporary camps and various impacts from different harvest techniques could occur on these lands.

Commercial timber sales would not be allowed within the Fortymile WSR Corridor, the Eagle Recreation withdrawal, and Fort Egbert Historic Site. This would protect approximately 249,000 acres from associated impacts from commercial harvest of timber. Commercial timber sales would be allowed on all other BLM lands (1,827,000 acres). Timber and firewood harvest activities can primarily impact line, form, color, and texture. The size and scope of impacts would depend on the size of the area and harvest techniques used. Few timber sales are anticipated during the life of the plan due to limited access and lack of commercially valuable timber. Impacts from timber and forest product harvest are discussed in section 4.3.1.9 Effects Common to All Subunits.

Effects from Lands and Realty

Under Alternative C, long-term camping for commercial purposes (i.e., camping in association with mining on state mining claims adjacent to BLM lands) would be allowed in “scenic” and “recreational” segments of the Fortymile WSR Corridor. Visual impacts to line, color and texture from temporary long-term camps, generally less than one acre in size, would occur. Color would be the greatest impact. Impacts would be the same as Alternative A.

Effects from Fluid Leasable Minerals

Approximately 608,000 acres would be closed to fluid leasable minerals, including the Fortymile WSR Corridor, the Fortymile SRMA, core caribou habitat within the Fortymile ACEC, all disposal lands, BLM Administrative sites, and the Fort Egbert and Eagle recreation withdrawals. Approximately 157,000 acres would be open to fluid mineral leasing subject to minor constraints. These actions would protect visual resources.

Approximately 1,468,000 acres would be open to leasing and exploration, of this 157,000 acres within the Fortymile ACEC would be subject to minor constraints, such as seasonal closures. Minor constraints would protect visual resources by limiting surface disturbance activities associated with fluid minerals at least seasonally. If exploration occurred, it would result in impacts such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture. However, no leasing or exploration is anticipated over the life of the plan.

No lands were identified as VRI Class I lands. Of VRI Class II lands, less than one percent or 14 acres would be managed as Class II, ninety-nine percent or 1,254,000 acres would be managed as Class IV lands while eleven percent (157,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape with minor constraints. Of VRI Class III lands,

one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 46,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Approximately 608,000 acres in the same areas described as closed to fluid leasable minerals (above) would also be closed to solid leasable minerals. Visual resources would not be impacted by mining solid leasable minerals on these lands. Impacts to visual resources by exploration, development and production of solid leasable mineral resources on the remaining approximately 1,311,000 acres would depend on the scale of the action and the number of mineral sites mined. However, no leasing or exploration is anticipated over the life of the plan.

Effects from Locatable Minerals

Approximately 608,000 acres would be closed to locatable mineral entry, including the Fortymile WSR Corridor, the Fortymile SRMA, core caribou habitat within the Fortymile ACEC, ungulate mineral licks, all disposal lands, BLM Administrative sites, and the Fort Egbert and Eagle recreation withdrawals. Visual resources would not be impacted by mining locatable minerals on these lands.

Approximately 1,469,000 acres would be open for mining. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines.

Large-scale placer mining (semi-mobile plant) operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. It is anticipated that the subunit would have up to three large-scale placer mine operations. Each operation would have a disturbed annual footprint of approximately 36 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 60 to 80 acres of disturbance. Impacts from all three operations would impact between 180 to 240 acres over the life of this plan.

The subunit is anticipated to have up to 33 small-scale placer mine operations. Operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 20 to 30 acres of disturbance. Impacts from all 34 operations would impact between 660 to 990 acres over the life of this plan.

Approximately 14 suction dredge operations are anticipated to occur in this subunit. Each operation would have a camp with a footprint of less than one acre over the life of the mine which is anticipated to be between 10 to 20 years. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from suction dredge camps are anticipated to be less than 14 acres annually over the life of this plan.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between six and 156 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to three exploration operations may occur over the life of this plan.

No lands were identified as VRI Class I lands. Of VRI Class II lands, less than one percent or 14 acres would be managed as Class II, ninety-nine percent or 1,411,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 46,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Impacts would be the same as Alternative B.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape

Of VRI Class I lands (144,000 acres) one-hundred percent would be managed as Class I. Of VRI Class II lands (104,000 acres), three percent (4,000 acres) would be managed as Class IV allowing a visible level of change to the landscape while ninety-seven percent or (100,000 acres) of VRI Class II would be managed as Class II. No lands were identified as VRI Class III lands. Of VRI Class IV lands (838 acres), one-hundred percent would be managed as Class IV.

The assignment of VRM Classes would be guided by BLM policy and guidance for designated Wild and Scenic Rivers in that, “wild” segments would be managed as VRM Class I (144,000 acres) while “scenic” segments would be managed as VRM Class II (100,000 acres). Recreation river segments (4,000 acres) and the remainder of the subunit (1,827,000 acres) would be managed as VRM Class IV. Some Recreation Management Zones will have different VRM classes due to the designation of the Wild and Scenic River segment.

Effects from Travel Management

Travel management for other BLM Lands outside the SRMA

The restriction of winter motorized use to OHVs weighing 1,000 pounds curb weight and less without permit would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 1,827,000 acres. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation. This is the same as Alternative B.

Summer travel by OHVs weighing 1,500 pounds curb weight and less are allowed on existing routes only. Travel off existing routes will be allowed to retrieve legally harvested game. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened existing routes except for game retrieval. Multiple passes over the same travel route for the retrieval of game could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic

materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. These management activities help protect the visual resources on 1,827,000 acres.

All other vehicle use would be by permit only on other BLM lands. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described under open Cross-Country Travel except on a larger scale.

Travel management within the SRMA

Common to All Zones

The restriction of motorized use to OHVs weighing 1,000 pounds curb weight and less without permit to winter use would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 249,000 acres. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation. This is the same as Alternative B.

Semi-Primitive Zones

Requiring a permit for summer motorized use within the Semi-Primitive RMZs (including the “wild” segments of the Fortymile WSR) would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 121,000 acres.

All Other Zones

The Backcountry, Middlecountry, Frontcountry, Rural Zones (including the “scenic” and “recreational” segments of the Fortymile WSR) would allow summer travel by OHVs weighing 1,500 pounds curb weight and less are allowed on existing routes only. Travel off existing routes will be allowed to retrieve legally harvested game. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened existing routes except for game retrieval. Multiple passes over the same travel route for the retrieval of game could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. These management activities help protect the visual resources on 121,000 acres.

All other vehicle use may be allowed under permit on 212,000 acres. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described under Common to All Travel Management except on a larger scale. This is the same as Alternative B.

Effects from Special Designations

Under Alternative C, 547,000 acres would be designated as the Fortymile ACEC to protect habitat for the Fortymile caribou herd and Dall sheep. Only 360,000 acres of the ACEC will remain closed to entry, location, and leasing of minerals subject to valid existing rights. Management decisions to protect wildlife habitat helps to preserve the visual character of the area.

Of VRI Class I lands (38,000 acres) one-hundred percent would be managed as Class I. Of VRI Class II lands (509,000 acres) sixty-nine percent or 352,000 acres would be managed as Class II while thirty-one percent or 157,000 acres would be managed as Class IV allowing a visible level of change to the landscape. No lands were identified as VRI Class III lands. Of VRI Class IV lands one-hundred percent (12 acres) would be managed as Class IV lands.

4.4.1.5.4. Alternative D

In general, this alternative anticipates the greatest amount of resource development and adopts the least restrictive VRM classes that would allow major development while protecting visual resource in certain areas. Additional impacts beyond those discussed under common to all are discussed below.

Effects from Cultural Resources

Same as Alternative B.

Effects from Fish and Aquatic Species

Under Alternative D, Sam Patch Creek (Map 7) has been identified as a High Priority Restoration Watershed and would be emphasized for restoration and/or protection. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on approximately 29,000 acres. Of VRI Class II lands, twenty-eight percent or 8,000 acres would be managed as Class III allowing some change to the natural landscape, while seventy-two percent or 21,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. No lands were inventoried as Class III or Class IV lands.

Effects from Visual Resources

Under Alternative D, all VRI Class I 144,000 acres (seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of the designated “wild” segments of the Fortymile WSR. These lands have an A rating for scenic quality, a high sensitivity and occur in the Foreground-Middleground Zones. This is the same as Alternatives A and B.

Of VRI Class II lands (ninety percent or 1,878,000 acres), five percent or 100,000 acres would be managed as VRM Class III potentially resulting in only a partial retention of landscape characteristics. These lands are designated “scenic” segments of the Fortymile WSR, having an A rating for scenic quality, a high sensitivity, and occurring in the foreground-middle ground zones. Approximately ninety-five percent (1,778,000 acres) of VRI Class II lands would be managed as VRM Class IV, potentially resulting in a high level of change to the characteristic landscape. These lands include the “recreational” segments of the Fortymile WSR and all lands outside the

Fortymile SRMA and have an A rating for scenic quality, both high and medium sensitivity and occur in all three distance zones.

Less than one percent of BLM lands had a VRI Class III (6,000 acres), and one-hundred percent of these lands would be managed as VRM Class IV, potentially resulting in a high level of change to the landscape characteristics. Most of these lands are located outside the Fortymile SRMA.

Only two percent of BLM lands had a VRI Class IV (47,000 acres), and one-hundred percent of these lands would be managed as VRM Class IV potentially resulting on a high level of change to the characteristic landscape. These VRM Class IV lands are located outside the Fortymile SRMA.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance, and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Under Alternative D, wilderness characteristics would be maintained on 54,000 acres (three percent) within the Middle Fork of the Fortymile WSR. Activities that impact the appearance of naturalness would be limited.

Of VRI Class I lands (54,000 acres) one-hundred percent would be managed as class I. No lands were identified as VRI Class II, III or IV lands.

Effects from Forest and Woodland Products

Under Alternative D, personal use of timber would not be authorized within the Eagle Recreational withdrawal and the Fort Egbert Historic Site. Temporary camps and various impacts from different harvest techniques would not impact 850 acres in these areas.

Commercial use of forest products would not be allowed within the Fort Egbert Historic Site. This would protect approximately 13 acres from impacts associated with commercial use of forest products.

Impacts from timber salvage and commercial timber sales would be the same as Alternative C.

Effects from Lands and Realty

Under Alternative D, long-term camping for commercial purposes (i.e., camping in association with mining on state mining claims adjacent to BLM lands) would be allowed in “wild,” “scenic,” and “recreational” segments of the Fortymile WSR Corridor. Visual impacts to line, color and texture from temporary long-term camps, generally less than one acre in size, would occur along all segments of the Fortymile WSR potentially impacting 248,000 acres.

PLO 3432 on Eagle Recreation Site would be revoked. This revocation would allow 816 acres to be transferred out of BLM management and open for development and associated surface disturbance activities.

Effects from Fluid Leasable Minerals

Approximately 158,000 acres would be closed to fluid leasable minerals, including “wild” and “recreational” segments of the Fortymile WSR, all disposal lands, BLM Administrative sites, the

Fort Egbert and Eagle recreation withdrawals, and within one-half mile radius of ungulate mineral licks. These actions would protect visual resources in these areas. Approximately 507,000 acres in the Fortymile ACEC would be open to fluid mineral leasing subject to minor constraints such as seasonal closures. These actions would protect visual resources by limiting surface disturbance activities associated with fluid minerals at least seasonally.

An additional 1,411,000 acres would be open to leasing and exploration subject to standard stipulations. If exploration occurred, impacts from those activities would occur, such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture. However, no fluid mineral exploration or leasing is anticipated in the Fortymile Subunit during the life of the plan.

No lands were identified as VRI Class I lands. Of VRI Class II lands seven percent (98,000 acres) would be managed under Class III retaining the natural appearance of the landscape while ninety-three percent (1,256,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape with 507,000 acres managed as Class IV lands with minor constraints. Of VRI Class III lands, one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 46,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Approximately 158,000 acres in the same areas described as closed to fluid leasable minerals (above) would also be closed to solid leasable minerals. Visual resources would not be impacted by mining solid leasable minerals on these lands.

Impacts to visual resources by exploration, development and production of solid leasable mineral resources on the remaining 1,411,000 acres would depend on the scale of the action and the number of mineral sites mined. However, no exploration or development of solid leasable minerals is anticipated during the life of the plan due to the low occurrence potential for these types of minerals in the subunit.

Effects from Locatable Minerals

Approximately 156,000 acres would be closed to locatable mineral entry, including "wild" segments of the Fortymile WSR Corridor, portions of the "recreational" segment of the Fortymile, ungulate mineral licks, all disposal lands, BLM Administrative sites, and the Fort Egbert and Eagle recreation withdrawals. Visual resources would not be impacted by mining locatable minerals on these lands. The remainder of the subunit, 1,920,000 acres would be open for mining. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines.

Large-scale placer mining (semi-mobile plant) operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. It is anticipated that the subunit would have up to three large-scale placer mine operations. Each operation would have a disturbed annual footprint of approximately 36 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 60 to 80 acres of disturbance. Impacts from all three operations would impact between 180 to 240 acres over the life of this plan.

The subunit is anticipated to have up to 34 small-scale placer mine operations. Operations would impact visual resources through changes to line, form, color, and texture from mined areas and related facilities. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 20 to 30 acres of disturbance. Impacts from all 34 operations would impact between 680 to 1020 acres over the life of this plan.

Approximately 18 suction dredge operations are anticipated to occur in this subunit. Each operation would have a camp with a footprint of less than one acre over the life of the mine which is anticipated to be between 10 to 20 years. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from suction dredge camps are anticipated to be less than 18 acres annually over the life of this plan.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between six and 208 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to four exploration operations may occur over the life of this plan.

No lands were identified as VRI Class I lands. Of VRI Class II lands five percent (98,000 acres) would be managed under Class III allowing some change in the natural landscape while ninety-five percent (1,764,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 4,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 46,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Approximately 145,000 acres would be closed to salable minerals, including the “wild” segments of the Fortymile WSR. Visual resources would not be impacted.

The remaining 1,931,000 acres would be available for mineral sales. Although this alternative would make an additional 101,000 acres available for salable minerals than in Alternatives B and C, impacts would essentially be the same because the level and location of mineral material sales is expected to be the same. Only 100 acres would be mined within the subunit and these sites would generally occur along existing roads.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape

Of VRI Class I lands (144,000 acres) one-hundred percent would be managed as Class I. Of VRI Class II lands, ninety-seven percent or 100,000 acres would be managed as Class III allowing change to the natural landscape, while three percent would be managed as Class IV allowing a

visible level of change to the landscape. No lands were identified as VRI Class III lands. Of VRI Class IV lands one-hundred percent (837 acres) would be managed as Class IV lands.

Under this alternative the assignment of VRM Classes would be guided by BLM policy and guidance for designated Wild and Scenic Rivers in that, “wild” segments would be managed as VRM Class I while “scenic” segments would be managed as VRM Class III. The remainder of the subunit including “recreational” river segments would be managed as Class IV. Some Recreation Management Zones will have different VRM classes due to the designation of the Wild and Scenic River segment.

Effects from Travel Management

Travel management on other BLM lands outside the SRMA

The restriction of winter motorized use to OHVs weighing 1,000 pounds curb weight and less without permit would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 1,827,000 acres. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation. This is the same as Alternatives B and C.

Cross-country summer travel by OHVs weighing 1,500 pounds curb weight and less is allowed. The weight restriction would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape. Multiple passes over the same travel route could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. These management activities help protect the visual resources on 1,827,000 acres.

All other vehicle use outside the SRMA would require a permit. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described above under Cross-Country Travel except on a larger scale.

Travel management within the SRMA

Common to All Zones

The restriction of winter motorized use to OHVs weighing 1,000 pounds curb weight and less without permit would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 249,000 acres. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation. This is the same as Alternatives B and C.

Within the SRMA, vehicle use exceeding the travel management prescriptions (e.g., vehicles larger than 1,500 pounds curb weight) would require a permit. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described above under Cross-Country Travel except on a larger scale.

Semi-Primitive Zones

The requirement for a permit for summer motorized use within the Semi-Primitive RMZs (including some of the “wild” segments of the Fortymile WSR) would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 54,000 acres.

All Other Zones

The Backcountry, Middlecountry, Frontcountry, and Rural Zones (including the “scenic”, “recreational”, and some “wild” segments of the Fortymile WSR) would allow cross-country summer travel by OHVs weighing 1,500 pounds curb weight or less. The weight restriction would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape. Multiple passes over the same travel route could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. These management activities help protect the visual resources on 195,000 acres.

Effects from Special Designations

Under Alternative D, 546,000 acres would be designated as the Fortymile ACEC to protect habitat for the Fortymile caribou herd and Dall sheep. The ACEC would be open to both locatable and leasable minerals. Management decisions to protect wildlife habitat helps to preserve the visual character of the area, but to a lesser extent than in Alternative C.

Of VRI Class I lands (38,000 acres) one-hundred percent would be managed as Class I. Of VRI Class II lands, less than one percent or 257 acres would be managed as Class III while ninety-nine percent (509,000 acres) would be managed as Class IV lands allowing a visible level of changes to the landscape. No lands were identified as VRI Class III lands. Of VRI Class IV lands one-hundred percent (13 acres) would be managed as Class IV lands.

4.4.1.5.5. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs and adopts a blend of VRM classes that would allow major development while protecting visual resource in certain areas. It has the second highest percentage of VRM Class II and Class III lands of all Alternatives. Class II allows a low level of change to the characteristic landscape where management activities may be seen but not attract the attention of the casual observer while Class III allows a moderate level of change to the characteristic landscape where management activities may attract attention but not dominate the view of the casual observer.

Effects from Cultural Resources

Same as Alternative B.

Effects from Fish and Aquatic Species

Under Alternative E, Sam Patch Creek and Steele Creek-Fortymile River (Map 6) have been identified as High Priority Restoration Watersheds and would be emphasized for restoration and/or protection. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on any disturbed areas within the 49,000-acre watershed.

All of the lands identified as High Priority Restoration Watersheds have a VRI Class of I or II. Portions of these two watersheds will be managed as Class of IV. Of VRI Class II lands, twenty-eight percent or 8,000 acres would be managed as Class II while seventy-two percent or 21,000 acres would be managed as Class IV lands. No lands within a High Priority Restoration Watershed were identified as VRI Class I, III or IV lands.

There are 10 Riparian Conservation Areas (RCAs) identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 192,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

All of the lands identified as Riparian Conservation Areas have a VRI Class of I or II. Portions of the ten watersheds will be managed as Class of IV. Of VRI Class I lands one-hundred percent or (73,000 acres) would be managed as Class I retaining the natural appearance of the landscape. Of VRI Class II lands, eighty-eight percent or 115,000 acres would be managed as Class II while twelve percent or 16,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands (569 acres) one-hundred percent would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands one-hundred percent (150 acres) would be managed as Class III lands allowing some preservation of the existing visual character of these lands.

Effects from Visual Resources

Under Alternative E, of VRI Class I, 145,000 acres (eight percent), almost one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of the designated “wild” segments of the Fortymile WSR. These lands have an A rating for scenic quality, a high sensitivity and occur in the Foreground-Middleground Zones. This is the same as Alternative A.

Of VRI Class II lands (ninety percent or 1,681,000 acres), thirty-eight percent (728,000 acres) would be managed as VRM Class II allowing a low level of change. These lands include the designated “scenic” segments of the Fortymile WSR and other lands within the Fortymile SRMA, having an A rating for scenic quality, a high sensitivity, and occurring in the Foreground-Middleground Zones. Less than one percent (11,000 acres) of VRI Class II lands would be managed as VRM Class III including “recreational” segments of the Fortymile WSR, potentially resulting in only partially retention of landscape characteristics, while fifty percent (942,000 acres) of VRI Class II lands would be managed as VRM Class IV, potentially resulting in a high level of change to the characteristic landscape. These lands are outside the Fortymile SRMA, have high and medium sensitivity, and occur in all three distance zones.

Less than one percent of BLM lands had a VRI Class III (6,000 acres) and one-hundred percent of these lands would be managed as VRM Class IV, potentially resulting in a high level of change to the landscape characteristics. Many of these lands are located outside the Fortymile SRMA.

Only two percent of BLM lands had a VRI Class IV (47,000 acres). Of VRI Class IV lands less than one percent or 3000 acres would be managed as VRM Class II allowing a low level of change to the characteristic landscape. These acres are associated with the Fortymile SRMA. The remaining two percent (44,000 acres) would be managed as VRM Class IV potentially resulting on a high level of change to the characteristic landscape. These VRM Class IV lands are located outside the Fortymile SRMA.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance, and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources regardless of VRM Class.

In summary, 144,000 acres will be managed as VRM Class I, 731,000 acres will be managed as VRM Class II, 11,000 acres will be managed as VRM Class III and 992,000 acres will be managed as VRM Class IV.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple. Wilderness characteristics would be maintained on 784,000 acres, by limiting activities that impact wilderness characteristics of size, naturalness and opportunities for solitude or primitive and unconfined recreation.

Of VRI Class I lands managed to maintain wilderness characteristics (57,000 acres) almost one-hundred percent would be managed under Class I retaining the natural appearance of the landscape while less than one percent would be managed as Class II. Of VRI Class II lands managed to maintain wilderness characteristics, almost one percent or 648,000 acres would be managed as Class II lands while less than one percent would be managed as Class IV lands. Of VRI Class IV lands managed to maintain wilderness characteristics, one percent or 3,000 acres would be managed as Class II lands. No lands were identified as VRI Class III.

Effects from Forest and Woodland Products

Under Alternative E, personal use of timber and forest products as well as commercial timber salvage and commercial use of forest products would be considered on all BLM-managed lands (1,876,000 acres). Commercial timber sales would be considered on BLM-managed lands except within the Fortymile WSR Corridor, Eagle Recreational Withdrawal, Fort Egbert Historic site, and the Fortymile and Mosquito Flats ACECs (641,000 acres). These acres would be protected from impacts associated with commercial timber sales.

Impacts would depend on the location, size or the area and harvest techniques used, however, harvesting forest products would impact color, line and texture throughout the subunit by allowing the harvest of white and black spruce for firewood and house logs.

Effects from Lands and Realty

Same as Alternative D.

Effects from Fluid Leasable Minerals

Approximately 745,000 acres would be closed to fluid leasable minerals, including the Fortymile WSR Corridor, the Fortymile ACEC, and the Mosquito Flats ACEC, BLM Administrative sites, Fort Egbert Historic Site and the Eagle recreation withdrawal protecting visual resources of these areas.

Approximately 1,131,000 acres would be open to leasing subject to minor constraints such as seasonal closures. Minor constraints would protect visual resources by limiting surface disturbance activities over the life of the plan. If exploration occurred, which is not anticipated, it could result in impacts such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture.

Only 40 acres of lands open for leasable minerals were identified as VRI Class I lands and these lands will be managed as Class IV. Of VRI Class II lands open, one hundred percent or 1,081,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 7,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 45,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Approximately 745,000 acres would be closed to solid leasable minerals, including the same areas described as closed under Fluid Leasable Minerals above. Visual resources would not be impacted by mining solid leasable minerals on these lands.

Impacts to visual resources by exploration, development and production of solid leasable mineral resources on the remaining 1,131,000 acres would depend on the scale of the action and the number of mineral sites mined. However, it is assumed that no solid mineral exploration, leasing, or development would occur during the life of the plan.

Effects from Locatable Minerals

Under Alternative E, 745,000 acres would be closed to locatable mineral entry, including the Fortymile WSR Corridor, the Fortymile ACEC, the Mosquito Flats ACEC, BLM Administrative sites, and Fort Egbert Historic Site and the Eagle recreation withdrawal. Visual resources would not be impacted by mining locatable minerals on these lands.

Remaining lands in the subunit, 1,132,000 acres, would be open to new locatable mineral entry. The level of mining activity is expected to increase slightly compared to Alternative A. Three large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from these operations would impact 180 to 240 acres over the life of this plan. Up to thirty-one small-scale placer mine operations, one more than in Alternative A, are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine for a total of 20 to 30 acres of disturbance. Impacts from all thirty-one operations would impact 620 to 930 acres over the life of this plan.

Only 40 acres of lands open for locatable minerals were identified as VRI Class I lands and these lands will be managed as Class IV. Of VRI Class II lands open, one hundred percent or 1,081,000 acres would be managed as Class IV lands allowing a visible level of change to the

landscape. Of VRI Class III lands, one-hundred percent or 7,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 45,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between 6 to 156 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to three exploration operations may occur over the life of this plan.

Impacts from suction dredging would be similar to Alternatives A, B, and C but would affect a larger area. Approximately ten suction dredge operations are anticipated annually, each with a camp footprint of less than one acre. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from camps associated with suction dredging are anticipated to be less than 10 acres annually over the life of the plan. Impacts from the various types of mining operations are described under section 4.3.1.9.

Effects from Salable Minerals

Approximately 249,000 acres would be closed to salable minerals, including “wild” and “scenic” segments of the Fortymile WSR Corridor and a one mile radius around ungulate mineral licks. Visual resources would not be impacted by mineral material sales in these areas.

The remaining 1,627,000 acres would be open. The impacts from the extraction of salable minerals would vary depending on the methods used and size of operation. Large mining operations would have the greatest impact to visual resources impacting line, form, color, and texture of mined areas, with the removal of vegetative cover and stockpiled materials creating form contrast between the mined areas and the stockpiled materials and the background landforms. Mining and material stockpiles would also create color contrast between the greens of vegetation and the browns of soils. Texture would change from a natural medium, subtle texture of vegetation to a course, rough contrast of disrupted soils and organic materials. Changes in line from the irregular, weak line of the natural landscape to a regular, strong line between natural vegetation and disturbed landscape could occur.

While most of the subunit is open to salable minerals it is anticipated that only 200 acres would be mined within the planning area and of that 200, approximately 100 acres would be mined within this subunit. Mining activities for salable minerals would generally occur along roads due to transportation requirements.

No lands open for salable minerals were identified as VRI Class I lands. Of VRI Class II lands, forty-two percent or 722,000 acres would be managed as Class II while less than one percent would be managed as Class III and fifty-six percent or 948,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 6,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, six percent or 6,000 acres would be managed as Class II while ninety-three percent or 44,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Semi-Primitive (144,000 acres) and Backcountry (82,000 acres) will protect visual resources the most while Middlecountry (11,000 acres), Frontcountry (10,000 acres) and Rural (1,000 acres) will allow various levels of change to the natural landscape. Other BLM lands have no prescriptions for physical settings (1,628,000 acres).

Of VRI Class I lands (145,000 acres) almost one-hundred percent would be managed as Class I, while less than one percent around West Fork Campground will be managed as Class III and less than one percent around Chicken will be managed as Class IV. Of VRI Class II lands (ninety percent or 1,681,000 acres) thirty-nine percent or 728,000 acres would be managed as Class II, while less than one percent or 11,000 acres would be managed as Class III, allowing change to the natural landscape, and fifty percent would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands (6,000 acres) one-hundred percent would be managed as Class IV. Of VRI Class IV lands almost one hundred percent (44,000 acres) would be managed as Class IV lands while less than one percent or 3,000 acres would be managed as Class II.

Under this alternative the assignment of VRM Classes would be guided by BLM policy and guidance for designated Wild and Scenic Rivers in that, “wild” segments would be managed as VRM Class I while “scenic” segments would be managed as VRM Class III. The remainder of the subunit including “recreational” river segments would be managed as Class IV.

Effects from Travel Management

Under Alternative E, open cross-country travel on BLM lands is restricted to summer motorized vehicles with 1,500 pounds curb weight or less and a width of 64 inches or less and winter motorized vehicles with 1,000 pounds curb weight or less and 50 inches in width or less outside the Fortymile Wild and Scenic River Corridor, and may impact visual resources primarily by disturbing vegetation by repeated passes and by clearing of travel routes. Weight restricted travel impacts 1,267,000 acres. The restriction of motorized use to OHVs weighing 1,500 pounds curb weight or less with a width of 64 inches or less helps reduce the amount of surface disturbance to vegetation with resulting changes to line, form, color and texture of the natural landscape on approximately 963,000 acres. However, allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes with impacts to vegetation in line, color and texture. Typically, user-created summer travel routes are more visible than winter travel routes that tend to be positioned near valley bottoms and are protected by snow and frozen ground. Summer travel routes are typically developed in areas that show changes to line, texture and color with repeated passes.

OHV use within the Fortymile Wild and Scenic River Corridor is limited to existing trails and winter use by vehicles with 1,000 or less curb weight and a width of 50 inches and summer motorized vehicles weighing up to 1,500 pounds curb weight and a width of up to 64 inches. The Fortymile ACEC (362,000 acres) and the Mosquito Fork ACECs (37,000 acres) limits use to winter only with motorized vehicles weighing up to 1,000 pounds curb weight and 50 inches in

width without a permit. Summer motorized use may be allowed by permit only. These restrictions will help reduce the impacts to line, form, color and texture of vegetation.

Effects from Special Designations

Under Alternative E, 362,000 acres would be designated as the Fortymile ACEC to protect habitat for the Fortymile caribou herd and Dall sheep. The ACEC would be closed to both locatable and leasable minerals. Use and development limits would apply to a small portion of the area seasonally from 10 May through 31 August. Winter motorized use will be limited by weight and require a permit. No lands were identified as VRI Class I, III or IV lands. Of VRI Class II lands within the ACEC (362,000 acres), one hundred percent would be managed as Class II lands protecting the existing landscape characteristics.

Under Alternative E, 37,000 acres would be designated as the Mosquito Flats ACEC to protect aquatic and wetland habitat diversity. The ACEC would be closed to both locatable and leasable minerals. Use and development limits would apply to a small portion of the area seasonally from 10 May through 31 August. Winter motorized use will be limited by weight and require a permit.

All the lands within this ACEC were identified as VRI Class II lands and would be managed as Class II.

Effects from Wild and Scenic Rivers would be the same as Alternative C.

4.4.1.6. Wilderness Characteristics Fortymile Subunit

Summary of Effects

There are 2,035,000 acres identified within the Fortymile Subunit as having wilderness characteristics of size, naturalness, and the opportunity for solitude or a primitive unconfined type of recreation experience. Managing lands for wilderness characteristics would limit surface-disturbing activities. See section 4.3.1.10 Impacts Common To All Subunits for impacts to wilderness characteristics. Alternative B would protect the most acres for wilderness characteristics while Alternative A would not identify any acres as having wilderness characteristic. Alternative C provides a balance between protection and resource use. Alternative D provides for resource development and protects the least amount of land for wilderness characteristics. Alternative E emphasizes other multiple uses while applying management restrictions to reduce impacts to wilderness characteristics.

4.4.1.6.1. Alternative A (No Action)

Effects from Wilderness Characteristics

No lands are managed for wilderness characteristic under this Alternative. Of the 2,035,000 acres identified as having wilderness characteristic, none would be directly managed to protect those values. Other actions and management strategies, and lack of activity may help protect those values indirectly.

4.4.1.6.2. Alternative B

Effects from Wilderness Characteristics

Of the 2,035,000 acres identified as having wilderness characteristic, 994,000 (forty-nine percent) would be directly managed to protect those values. These areas include the Fortymile SRMA and the Fortymile ACEC. Other actions and management strategies may help protect wilderness values indirectly on the remaining 1,041,000 acres. Mineral exploration or development is possible on 976,000 acres, however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these mining claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits.

4.4.1.6.3. Alternative C

Effects from Wilderness Characteristics

Of the 2,035,000 acres identified as having wilderness characteristic, 487,000 (twenty-four percent) would be directly managed to protect those values. These areas include the core of the Fortymile ACEC, the West Fork RMZ (Backcountry RSC Class) and non-navigable “wild” river segments (Semi-Primitive RSC Class). Other actions and management strategies may help protect wilderness values indirectly on the remaining 1,547,000 acres. Mineral exploration or development is possible on 1,311,000 acres, however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Development of recreation facilities and travel management in Middlecountry and Frontcountry RMZs and on other BLM-managed lands would also impact wilderness characteristics.

4.4.1.6.4. Alternative D

Effects from Wilderness Characteristics

Of the 2,035,000 acres identified as having wilderness characteristic, 54,000 (three percent) would be directly managed to protect those values within the Middle Fork Fortymile RMZ. Other actions and management strategies may help protect wilderness values indirectly on the remaining 1,981,000 acres. Mineral exploration or development is possible on 1,920,000 acres, however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Development of recreation facilities and travel management in Middlecountry and Frontcountry RMZs and on other BLM-managed lands would also impact wilderness characteristics.

4.4.1.6.5. Alternative E (Proposed RMP)

Of the 1,838,000 acres identified as having wilderness characteristics, those characteristics would be maintained on 784,000 acres by limiting activities that impact size, naturalness

and opportunities for solitude or primitive and unconfined recreation. Mineral exploration or development is possible on 1,627,000 acres, however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Development of recreation facilities and travel management in Middlecountry and Frontcountry RMZs and on other BLM-managed lands would also impact wilderness characteristics.

4.4.1.7. Wildlife Fortymile Subunit

Summary of Effects

Overall, the relative potential among Alternatives for negative effects to wildlife is least in Alternative A and progressively greater through Alternative D, with Alternative E (Proposed RMP) being most similar to Alternative C. This potential is most related to lifting of mineral withdrawals (see Impacts Common to All Subunits Section 4.3.1.12. Slightly less area is opened to mineral location, entry, and leasing in Alternative E than Alternative C. Alternative E is similar to Alternative D in some aspects of travel management—cross-country use of summer OHVs is allowed in much of the subunit and motorboat use (including personal watercraft and hovercraft) is largely unrestricted, uses which can negatively affect wildlife and habitat.

All action alternatives open considerable areas to mineral location and entry and leasing: 43-91% of the subunit. Although mining operations are expected to increase only moderately during the life of the plan under any alternative, Alternatives C, D, and E will open 1.3, 1.7, and 1.1 million acres (respectively) to mineral location, entry, and leasing, which will create negative effects over the long-term for wildlife.

Alternative D opens essentially all BLM-managed calving/postcalving habitat in the subunit to mineral entry, location and leasing, including some of the most highly used calving habitats.

ACECs for caribou and Dall sheep are designated in all action alternatives; their primary effect will be to limit potential impacts from mining activities and motorized vehicle use. The ACEC in Alternative B includes all of the concentrated calving/postcalving habitats of the Fortymile herd (on BLM land) while Alternatives C and E close only 49% of the concentrated calving/postcalving habitats managed by BLM. Alternative D closes only areas around a few ungulate mineral licks and, as a result, substantial impacts to Fortymile calving habitat could occur.

In Alternative E, the Fortymile ACEC is reduced in size relative to Alternative C, but closes essentially the same area to mineral location, entry, and leasing. In Alternative E, management provisions very similar to those of the ACEC in other alternatives (but not including mineral closures) is applied to a larger area delineated as crucial caribou and Dall sheep habitat. This could result in slightly lower priority given to habitat values relative to other resources and uses than in the Alternative C ACEC.

A Mosquito Flats ACEC is proposed only in Alternative E which will protect wetland-associated species, such as trumpeter swan, short-eared owl, and calving moose, from potential impacts from summer OHV use and mineral development.

Alternative B would result in the fewest impacts to wildlife resources from recreation and travel management. Alternative B adds over 500,000 acres to the SRMA in a Semi-Primitive RMZ that occurs largely within the Fortymile ACEC. Alternatives C and D and E establish a smaller SRMA that essentially coincides with the current Fortymile WSR Corridor. Summer OHVs will be limited to less than 1,500 pounds in all action alternatives and to existing trails/routes in Alternatives B and C. Alternatives D and E restrict summer summer OHV (and motorized boat use) less than Alternatives B and C, with the greatest potential impacts occurring from cross-country OHV use and proliferation of user-created trails. Alternative E is more similar in travel management to Alternative D which doesn't restrict summer OHVs to existing trails/routes (ie. it allows cross-country travel). However Alternative E will eventually (through travel management planning) restrict summer OHV use to designated trails in crucial caribou and Dall sheep habitat and potentially elsewhere.

Table 4.9. Indicators of Effects of Locatable Minerals on Wildlife in the Fortymile Subunit

Indicator	Alternative				
	A	B	C	D	E
WSR Corridor (acres closed)	248,000	248,000	248,000	145,000	248,000
ACEC (acres closed)	0	690,000	369,000	2,000	399,000
Within Riparian Conservation Areas (acres)	0	205,000	1,000	1,000	192,000
Total Closed to Locatable Minerals (acres)	2,068,000	1,076,000	623,000	163,000	745,000
Total Open to Locatable Minerals (acres)	0	800,000	1,253,000	1,713,000	1,132,000
Total Open to Locatable Minerals (percent)	0	43	67	91	60
Predicted Mining operations					
Suction dredge operations (number)	6	10	14	18	10
small-scale placer operations (number)	27	31	33	40	31
large-scale placer operations (number)	2	3	3	3	3
Proportion of Fortymile calving range closed to mineral location, entry and leasing^a					
Concentrated calving range (percent)	62.5	62.5	49	33	49

^aThis indicator includes all lands in calving range, including state, private, and National Park Service lands. Other indicators refer only to BLM-managed lands. In Alternative D only the NPS lands in the calving range are closed to mineral entry. An unknown portion of BLM lands will be conveyed to the State of Alaska and Native Corporations; after conveyances, a lower proportion of calving range will be closed to mineral entry (except in Alternative D).

4.4.1.7.1. Alternative A (No Action)

Effects from Fish and Aquatic Species

No RCAs are identified in this alternative. However, new mineral location and associated placer mining operations also do not occur.

Effects from Leasable Minerals

None of the subunit is open to leasing.

Effects from Locatable Minerals

Currently all of the subunit is closed to mineral location and entry, however mining (mostly small-scale placer operations) occurs on existing claims (10,000 acres). This alternative would support the least amount of mining and would minimize the potential for the types of impacts of mining described in section 4.3.1.12 Effects from locatable minerals, common to all subunits. Current mining is mostly suction dredging and small-scale placer mines and is concentrated along and near the road- and river-accessible portions of the Fortymile WSR.

Effects from Recreation

The existing recreation management program has focused on campgrounds and waysides along the Taylor Highway and Fortymile WSR Corridor and Eagle/Fort Egbert. The existing MFP (BLM 1980) is not as specific as current RSC objectives as to how recreation is to be managed, but most the unit has been managed with allowance for dispersed recreation and no development of facilities. Under Alternative A, recreation affects wildlife primarily along the Taylor Highway and road-accessible river sections. Wildlife is displaced, at least temporarily, by recreational activities, and that effect is greater at higher recreational use sites. Disturbance of nesting raptors likely occurs at times along the Fortymile River and may lead to displacement to other areas, nest abandonment or reduced survival of nestlings. SOPs do not exist to protect nest sites of priority raptor species. Bears can be attracted to garbage which can lead to conflicts and potential removal. Recreational OHV users are increasing in number and are traveling further and expanding the zone of impact further, though use and impacts are still concentrated close to roads.

Effects from Travel Management

Currently, all of the Fortymile area is open to small OHV use during both summer and winter, including cross-country travel. Outside of the Fortymile WSR Corridor, there are no OHV restrictions, except that use of vehicles exceeding 6,000 pounds requires a permit. The cross-country use of summer OHVs has resulted in a proliferation of trails leading to local habitat impacts and disturbance impacts. The network of user-created, unsustainable trails can be expected to continue to grow under this alternative, with corresponding increase in impacts to wildlife. Motorized boats are not permitted on non-navigable “wild” segments of the Fortymile WSR Corridor, which will reduce disturbance impacts to wildlife relative to other alternatives.

Effects from Special Designations

No ACECs exist in this alternative, meaning special management is not implemented for Dall sheep and caribou. Management of the Fortymile River to “preserve the river and its immediate environment and its existing primitive setting” will generally serve to protect wildlife resource values in the corridor.

4.4.1.7.2. Alternative B

Effects from Fish and Aquatic Species

Eleven drainages are designated as Riparian Conservation Areas, improving the effectiveness of reclamation of mined habitats there. Potential impacts to riparian and aquatic-dependent wildlife, including BLM Alaska sensitive species and Bird Species of Conservation Concern, will be reduced in these stream sections (two percent of stream miles in subunit).

Effects from Leasable Minerals

Forty-seven percent of BLM lands in the subunit would be open for leasing. No leasable minerals are expected to be developed in the Fortymile Subunit due to low potential for occurrence of economically recoverable resources. The RMP will need to be amended before coal could be leased. Leasing of other minerals would require additional NEPA analysis. Exploration for leasable minerals could occur throughout the area open to leasing although none is predicted to occur. The entire subunit may be considered for coal inventory and exploration, although none is predicted in the subunit. However, the potential for exploration for leasable minerals does exist and is allowed except in the ACEC and Fortymile WSR Corridor. Considerable surface disturbance may occur with exploration for coal (e.g., 250 x 250 foot trenches, 50 x 40 foot drill pad sites). SOPs and Fluid Mineral Leasing Stipulations (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) would apply to exploration and leasing, but would result in relatively minor reductions in impacts. Additional SOPs and leasing stipulations would be developed prior to coal or fluid mineral leasing.

Effects from Locatable Minerals

Effects of mining for locatable minerals would increase in this alternative relative to Alternative A because forty-seven percent of the area would be opened to mineral location and entry. Of BLM lands in the general calving range of the radiocollared Fortymile caribou herd during the last 16 years, almost all remains closed to mineral location and entry. Impacts on caribou calving and postcalving activity and habitat will be minor. Other seasonal caribou habitats, though considered less sensitive, would be open to mining. Also, all Dall sheep range on BLM lands remains closed to mineral location and entry. Suction dredge operations are predicted to increase over Alternative A levels, which may result in disturbance of more nest sites of peregrine falcons. Although the increase in mining activity is predicted to be small (e.g., only four more small-scale placer mines than Alternative A), the location of mining may change, requiring access (roads and trails) which may have larger impacts on wildlife. Also, the increase in exploration and mining operations could be much larger than predicted, dependent on the results of exploration, prices of minerals, and access which may be provided by other activities. SOPs (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) would apply, but would result in relatively minor reductions in impacts.

Effects from Recreation

The Fortymile SRMA (792,000 acres) has specific management objectives and prescription settings. The Fortymile WSR Corridor will be managed mostly for a Semi-Primitive or Backcountry setting. The North Fork Fortymile and Mosquito Fork RMZs will be managed as Semi-Primitive, and the Fortymile RMZ as Backcountry. This high proportion of Semi-Primitive and Backcountry management will limit impacts to wildlife. In this subunit, some motorized use is allowed in Backcountry RMZs, but this use would be managed to retain Backcountry objectives. The remainder of the unit is not a recreation management area and impacts would be similar to those discussed under Alternative A.

Effects from Travel Management

Under Alternative B, summer OHVs and UTVs would be restricted to less than 1,500 pounds curb weight and would be allowed only on existing trails (Map 44) in all areas, except Semi-Primitive RMZs where they would be prohibited. This restriction will minimize proliferation of new trails and reduce impacts to wildlife and wildlife habitats from off-trail use on 120,000 acres.

Effects from Special Designations

The current (1992–2008) general calving/postcalving range of the Fortymile herd is designated as the Fortymile ACEC (Map 60). This includes all Dall sheep range in the subunit. Several ungulate mineral licks occur within the main ACEC boundary, and one occurs outside of the main ACEC boundary. This ACEC includes most calving/postcalving habitat on BLM lands in the subunit. These lands will be closed to mineral entry, location, and leasing, and motorized vehicle use will be limited so as to protect the value of the area for caribou. Ungulate mineral licks will be protected from activities that may affect ungulate use of these licks. Potential impacts to caribou will be small, but larger than in Alternative A (which had no ACEC but was entirely closed to mineral location and entry).

4.4.1.7.3. Alternative C

Effects from Fish and Aquatic Species

No RCAs are identified, increasing potential impacts to riparian and aquatic species relative to Alternative B. Since seventy-one percent of area would be opened to mineral location, impacts would also be greater than in Alternative A.

Effects from Leasable Minerals

The effects will be similar to Alternative B, except that seventy-one percent of area is open to leasing and so greater potential for exploration and leasing exists. The area of less concentrated use by calving/postcalving caribou will be open to leasing, however minor restrictions will be in place which will slightly lessen potential impacts.

Effects from Locatable Minerals

Effects of mining for locatable minerals would increase in this alternative relative to Alternative B because seventy-one percent of the area would be opened to mineral location and entry. Of BLM lands in the area of concentrated calving/postcalving of the radiocollared Fortymile caribou herd during the last 16 years, almost all remains closed to mineral location and entry. Areas that have been less intensively used or used only in some years by calving/postcalving caribou will be opened to mineral entry. A portion of the area opened will be managed with SOPs (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) to minimize impacts of mining which occurs on calving caribou.

Under this alternative, the potential impacts to caribou calving and postcalving habitats will be greater, but the most important caribou habitats on BLM lands will remain free of mining. These BLM lands include some of the most concentrated areas of documented calving/postcalving. Also, all Dall sheep range on BLM lands remains closed to mineral location and entry as do identified ungulate mineral licks, including one outside of the main Fortymile ACEC boundary. Suction dredge operations are predicted to increase somewhat over Alternative B levels which may result in disturbance of more nest sites of peregrine falcons. The increase in mining activity is predicted to be small. However, the increase in mining operations could be much larger than predicted, dependent on the results of exploration, the prices of minerals, and access which may be provided by other activities. Also, new mines may be initiated in remote areas, requiring access (roads and trails) which may have larger impacts on wildlife.

Effects from Recreation

In this alternative, only the Fortymile WSR Corridor is included in the SRMA (Map 45), with areas outside managed as undesignated (which will not feature facilities development). The remoteness of the undesignated areas that were Semi-Primitive in Alternative B will probably result in little difference in management, use or effects, in the near future. However, more accessible portions will likely see greater recreation-related changes, and access could be developed to some currently remote areas for purposes such as mining (leading to additional motorized recreation access). The changes in management of greater portions of the Fortymile WSR Corridor with objectives for more intensive use will result in somewhat greater change to wildlife habitats than in Alternative B.

Effects from Travel Management

The area where summer OHVs and UTVs would be allowed would expand relative to Alternative B, due to less area in a Semi-Primitive classification. This would allow motorized use in essentially the entire subunit, with the exception of the Semi-Primitive portions of the Fortymile WSR Corridor (which includes most of the “wild” river segments). The increase in impact to wildlife of this change would be small, because existing trail routes are very limited in the portion of the Fortymile WSR Corridor which would be opened to OHV use (head of Hutchinson Creek). New managed trails that may be created in these areas, could be routed to minimize impacts to wildlife. Effects of this alternative relative to Alternative B is dependent on extent of new access created for other activities. OHVs and UTVs up to 1,500 pound curb weight would be allowed off-trail for game retrieval.

Effects from Special Designations

The ACEC in this alternative focuses on the most highly used portions of the most sensitive caribou habitats (current, 1992–2008, calving/postcalving). The areas of most dense use (core habitats) are closed to mineral entry, location, and leasing (and this includes all Dall sheep habitat), while the surrounding area of slightly less dense caribou use is open with SOPs or leasing stipulations designed to mitigate impacts to calving/postcalving caribou. Relative to Alternative B, this alternative would increase the area available for resource development and increase the potential for fragmentation of caribou calving/postcalving habitat. The ACEC includes and would be compatible with special designations in the State of Alaska Upper Yukon Area Plan for caribou core calving areas and Dall sheep habitat, as well as Leasehold Location Orders for ungulate mineral licks (ADNR 2003).

4.4.1.7.4. Alternative D

Effects from Fish and Aquatic Species

Same as Alternative C.

Effects from Leasable Minerals

Effects will be similar to Alternative C, except that ninety-two percent of the area is open to leasing and so greater potential for exploration and leasing exists. Portions of the Fortymile WSR Corridor remain closed as do known ungulate mineral lick sites. Standard SOPs (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) will apply to exploration operations, including seasonal restrictions in calving areas and during lambing periods, but more protective SOPs that apply in ACECs will be used only near ungulate lick sites.

Effects from Locatable Minerals

Effects of mining for locatable minerals would increase in this alternative relative to Alternative C because ninety-three percent of the area would be opened to mineral location and entry. Of BLM lands in the area of concentrated calving/postcalving of the radiocollared Fortymile caribou herd during the last 16 years, almost all is open to mineral location and entry. Only a few ungulate mineral lick sites and very small portions of the calving range which intersect the Fortymile WSR Corridor are closed to mineral entry. Under this alternative, the potential impacts to caribou calving and postcalving habitats will be greatest. Of the entire Fortymile caribou herd recent calving/postcalving range, the only large portion which is closed to mineral location and entry is that portion within Yukon-Charley Rivers National Preserve (Table 4.9, "Indicators of Effects of Locatable Minerals on Wildlife in the Fortymile Subunit"). Three quarters of the area of the most highly concentrated use by caribou for calving will be open for mineral entry. Also, all Dall sheep range on BLM lands is open to mineral location and entry except for one identified mineral lick.

Major portions of the Fortymile WSR Corridor are open to locatable and leasable minerals. Impacts to riparian habitats from placer mining, and increased disturbance from boat and mining activity can be expected. Although nearly two million acres are opened to mineral location and entry, mining operations on BLM lands are predicted to increase (relative to Alternative A; all closed) by 12 suction dredge, 13 small-scale placer, one large-scale placer and zero large lode operations (Table 4.9, "Indicators of Effects of Locatable Minerals on Wildlife in the Fortymile Subunit"). Although the level of mining activity predicted represents a very small portion of the subunit, new mines will likely be initiated in remote areas and require access (roads and trails), which may have larger impacts on wildlife. The amount and length of features is dependent on the location of the new mining claims and mines. At these predicted levels of mining, the impact of BLM actions on Fortymile caribou will likely be modest during the life of the plan. Portions of the calving/postcalving range may be developed which will represent a small loss or fragmentation of habitat and an incremental reduction in Fortymile caribou range quality.

However, it is also possible that the increase in mining operations could be much larger than predicted or located in key habitats. Dependent on the results of exploration, prices of minerals, and access routes which may be provided by other activities, mining activity can vary substantially and impacts could be considerably greater than anticipated.

Opening of nearly two million acres to mineral location and entry will likely result in substantial exploration activity. Seasonal SOPs (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) are in place to limit aircraft activity close to the ground in caribou calving/postcalving habitats and Dall sheep habitats during lambing. SOPs concerning activities near raptor nest sites are also part of this RMP, but little is known of raptor nest sites in the subunit except for peregrine falcons within portions of the Fortymile WSR Corridor. Disturbance of caribou and sheep will occur outside of the restricted time periods and disturbance of undocumented raptor nests will occur. Surface disturbance involving roads and many drill pads could potentially occur at larger deposits.

Effects from Recreation

As in Alternative C, only the Fortymile WSR Corridor is included in the SRMA. Some segments will be managed to allow greater recreation-related change to the landscape (e.g., more Frontcountry and Middlecountry), resulting in corresponding increases to impacts to wildlife, particularly in the more accessible portions of the subunit.

Effects from Travel Management

The area where summer OHVs would be allowed would expand relative to Alternative C, due to less area in Semi-Primitive RMZ classification (Map 46). OHVs would not be restricted to existing trails and would be allowed to travel cross-country. Impacts under this alternative would be similar to Alternative A. Although summer OHVs would be limited to 1,500 pounds curb weight, an expanding network of user-created trails can be expected.

Effects from Special Designations

A 546,000-acre ACEC is designated in this alternative (Map 62), but only the half-mile radius around ungulate mineral licks is closed to mineral entry and location. The rest of the ACEC, except small portions of the Fortymile WSR Corridor, is open to mineral entry and location (as well as cross-country OHV use), including some of the most highly used portions of the Fortymile herd calving and postcalving range and all Dall sheep habitat for the Glacier Mountain and Mount Harper subpopulations. ACEC-specific SOPs and Fluid Mineral Leasing Stipulations (Appendix A, *Standard Operating Procedures and Fluid Mineral Leasing Stipulations*) would apply to BLM permitted activities in the concentrated calving/postcalving area: seasonal activity restrictions will apply, impacts of access will be minimized, and operators must submit a plan describing methods proposed to minimize impacts to caribou and Dall sheep and their habitat.

Although the near-term development of mineral resources on these lands is predicted to be low, new exploration results, changing market conditions, or creation of new access to these areas by other operations or activities may change that prediction. In addition, staking of mining claims in the calving area would potentially have impacts far in the future. Use of SOPs for operations in the ACEC may mitigate a small portion of impacts, but most will remain, especially in the case of locatable minerals, where the location of the operation is fixed and development of the mineral deposit is not a discretionary decision by the BLM. Under this alternative, only twenty-nine percent of the Fortymile caribou herd concentrated calving area would be closed to mineral location, entry, and leasing (such as that within Yukon-Charley Rivers National Preserve). Some fragmentation of habitats and reduction in habitat quality for caribou and Dall sheep are likely under this alternative. Some portions of the current caribou calving area could become unused or little used. The degree of impact will be related primarily to the amount and type of mining development that occurs.

4.4.1.7.5. Alternative E (Proposed RMP)

Effects from Fish and Aquatic Species

Ten RCAs and two High Priority Restoration Watersheds are designated and closed to locatable and leasable minerals. Therefore, Fish and Aquatic species management in Alternative E would be beneficial to wildlife, especially riparian and wetland-dependent wildlife, relative to alternative C.

Effects from Wildlife

In Alternative E, management provisions very similar to those of the ACEC in other alternatives (but not including mineral closures) are applied to a larger area delineated as crucial caribou and Dall sheep habitat. However, these provisions will likely be somewhat less effective in protecting habitat values than if applied to a designated ACEC.

Effects from Leasable Minerals

The effects will be similar to Alternative B, except that slightly more (fifty percent of subunit) is open to leasing and so greater potential for exploration and leasing exists than in Alternative B, but less than in Alternative C.

Effects from Locatable Minerals

Sixty percent of the subunit lands would be opened to mineral location and entry, so the effects of mining for locatable minerals on wildlife would be similar to Alternative C (67 percent open). Of BLM lands in the area of concentrated calving/postcalving of the radiocollared Fortymile caribou herd during the last 16 years, 49 percent will be open for mineral entry and location (the same as Alternative C).

Under this alternative, the potential impacts to caribou calving and postcalving habitats will be less than in Alternative D and similar to alternative C. These BLM lands include some of the most concentrated areas of documented calving/postcalving. Also, all Dall sheep range on BLM lands remains closed to mineral location and entry in Alternatives C and E, as do identified ungulate mineral licks. The number of placer mining and suction dredge operations is predicted to be the same as in Alternative B. However, the number of mining operations could be much larger than predicted, dependent on the results of exploration, the prices of minerals, and access which may be provided by other activities. Also, new mines may be initiated in remote areas, requiring access (roads and trails) which may have larger impacts on wildlife than mines near the road system. All of these potential impacts are similar in Alternative E and Alternative C.

Effects from Forest Products

Potential impacts from harvest of timber and other forest products will be similar to, but lower, in Alternative E than Alternative C. Contrary to Alternative C, Alternative E will not allow commercial timber sales in the two ACECs or in crucial caribou and Dall sheep habitat but will consider applications for personal use of timber and commercial use of forest products in the "Wild" segments of the Fortymile WSR.

Effects from Recreation

Similar to Alternative C.

Effects from Travel Management

Effects from OHVs would be similar to Alternative D because cross-country summer OHV travel will be allowed (OHV travel was limited to existing routes in Alternatives B and C). In addition, Alternative E would allow summer OHV use in essentially the entire subunit (except the Mosquito Flats ACEC), although in crucial caribou and Dall sheep habitat this use would be limited (following travel management plan completion) to designated routes where it is compatible with caribou and Dall sheep habitat. Alternative C prohibited OHV use in Semi-Primitive RMZs, Alternative E does not. In the Semi-Primitive and Backcountry RMZs (portions of the Fortymile WSR corridor) management to avoid extensive summer OHV use will likely be implemented in the subunit Travel Management Plan.

Alternatives C, D, and E allow motorboats on non-navigable "Wild" segments of the Fortymile WSR (Alternatives A and B do not) and Alternative E also allows airboats, hovercraft, and personal water craft on all waters including non-navigable "Wild" segments. Potential effects of motorized boat usage are discussed in the "Common to All Subunits" section. An increase in motorized boat usage will occur with the addition of boat types allowed. Rocky rapids and

difficult current at The Kink on the North Fork Fortymile would presumably limit the numbers of motorboats using the North Fork, Champion Creek, Middle Fork, and Joseph Creek. Jetboats and airboats would not likely use the area above The Kink in large numbers, because it would generally require portaging around the rapids; hovercraft would be more likely to traverse or be portaged around the rapids. Some motorized use of the Wild segments will likely occur (if allowed) and expose wildlife that are not habituated to these activities.

The Mosquito Fork above Ingle Creek is not generally suitable for prop boat use and jetboat use may at times be limited by rock and low water. Hovercraft and airboat use could occur under most conditions. Airboat and hovercraft use could occur in wetlands along the Mosquito Fork and continue upstream beyond the Wild River Corridor into Mosquito Flats wetlands. Peregrine falcon, osprey, and bald and golden Eagle (and some waterfowl) nest along Mosquito Fork and would be disturbed by such use. Airboat and hovercraft use in Mosquito Flats could affect waterfowl nesting and moose calving. Most motorboat use would likely occur during hunting seasons which are mostly during the late-nesting or post-nesting periods, reducing potential impacts. Technological changes in capabilities of motorized boats could result in greater use of remote areas or those difficult to access due to water and channel conditions.

Overall, the negative impacts of Travel Management on wildlife will be less than Alternative A and similar to (but less than) Alternative D. Travel Management plans, planned to be completed in 5 years, may reduce impacts of summer OHVs.

Effects from Special Designations

The Fortymile ACEC is smaller in size than in Alternative C (equivalent in area to the central portion of the ACEC in Alternative C that was closed to mineral location, entry, and leasing, see Maps 61, 63, and 103). This protects roughly 49% of the Fortymile caribou herd recent concentrated calving/postcalving habitat (which is also important to caribou in other seasons) from effects of locatable minerals and also protects habitats of other species as well. In Alternative E, management provisions similar to those of the ACEC in other alternatives (but not including mineral closures) are applied to a larger area delineated as crucial caribou and Dall sheep habitat. However, these provisions will likely be somewhat less effective in protecting habitat values than if applied to the same area designated as an ACEC.

The Mosquito Flats ACEC (not designated or receiving special management in any other alternative) will be established in this alternative. Management will preclude effects from locatable or leasable mineral development and summer OHV use. This will benefit wildlife that utilize wetland habitats for all or part of their life history, including moose calving (and year-round habitat) and bird nesting. The majority of trumpeter swan nesting on BLM lands in the planning area (documented in statewide surveys) occurs in Mosquito Flats; bald eagle and osprey nest along the Mosquito Fork, and an unusually dense population of short-eared owls occurs in Mosquito Flats.

Effects from Special Designations

The Fortymile ACEC covers more of the Fortymile Herd calving/postcalving distribution (nearly as large as in Alternative B) and is all closed to mineral leasing and location (as compared to a partial closure in Alternative C). This protects most of the Fortymile caribou herd recent calving/postcalving habitat (which is also important to caribou in other seasons) from effects of locatable minerals and also protects habitats of other species as well.

The Mosquito Flats ACEC (not designated or receiving special management in any other alternative) will be established in this alternative. Management will preclude effects from locatable or leasable mineral development and summer OHV use. This will benefit wildlife that utilize wetland habitats for all or part of their life history, including moose calving (and year-round habitat) and bird nesting. The majority of trumpeter swan nesting on BLM lands in the planning area (documented in statewide surveys) occurs in Mosquito Flats; bald eagle and osprey nest along the Mosquito Fork, and an unusually dense population of short-eared owls occurs in Mosquito Flats.

4.4.1.7.6. Cumulative Impacts

Cumulative impacts will be greatest to caribou and are discussed in section 4.3.1.12 Wildlife, Effects Common to All Subunits, because Fortymile caribou range across all subunits (and into Canada). Other wildlife species may also experience effects similar to those discussed in that section. The lands in the Fortymile subunit are more dispersed among other landowners than in other subunits, so cumulative impacts will be determined to a greater extent by actions on other lands. Mineral and resource development is a priority on Native Corporation. State lands were selected largely on the basis of mineral potential and resource development is a priority, but they are also managed for multiple use. Caribou and other wildlife will be affected by the regional extent and magnitude of mineral development in combination with other activities which create and utilize access to remote areas (such as recreational OHV use).

4.4.2. Resource Uses

4.4.2.1. Locatable Minerals Fortymile Subunit

Summary of Effects

Under Alternative A, the potential for future exploration and development would be limited to existing mining claims. Mining activity would decrease over time as land encumbrances would prohibit new mining claims. Alternatives B, C, D, and E would open large acreages to new mineral entry, ranging from 800,000 acres to 1,713,000 acres, including some high mineral potential lands, pending the removal of existing withdrawals. All alternatives would close portions of the Fortymile WSR Corridor, impacting locatable minerals. All closures or restrictions would prevent obtaining the minerals, and their benefits to society would remain unavailable for the foreseeable future. Additionally, the infrastructure that typically accompanies development would not occur.

4.4.2.1.1. Effects Common to All Alternatives

State- and Native-selected lands would remain segregated from mineral entry and location until final land title has been established. New mining operations, regardless of size, on withdrawn lands would require a validity exam prior to approval of a Plan of Operation. All active mining operations would be required to submit a Plan of Operation if the 1,000 ton bulk sample is exceeded (43 CFR 3809.11(b)). Mining operations using cyanide in the processing of amenable ores would require a Plan of Operations and a financial guarantee outside the statewide bond pool. Mining claim surface occupancy would be guaranteed, but it must remain reasonably incident to the current levels of mining activity. Bonding would be required of all mining operations other than those grandfathered under 43 CFR 3809.300 and 43 CFR 3809.400. Reclamation of surface

disturbance is required. Undue and unnecessary degradation would remain the standard for mining operations on BLM lands. The right of reasonable access across BLM lands to unpatented federal mining claims would be assured. Cultural resources encountered during surface-disturbing activities are subject to the Antiquities Act (43 CFR 420(b)(8)). Economic impacts of mining decisions are analyzed in section 4.4.4.1 Economics Fortymile Subunit.

Riparian Conservation Areas (RCAs) would be established on river drainages that have been identified for the protection of fish resources. Additional baseline data would be required in RCAs prior to surface disturbance on valid existing claims. Active restoration practices would be developed and implemented in these areas. This additional cost for doing business would turn many prospective miners away and recovery of those minerals within the RCA would not be available for the benefit of society.

4.4.2.1.2. Alternative A (No Action)

Under Alternative A, no withdrawal review would occur and all ANCSA 17d(1) withdrawals would not be revoked. The BLM would continue to administer new and existing operations on federal unpatented mining claims through Notices or Plans of Operations. However, the potential for future exploration and development would be limited to 10,000 acres of existing mining claims. Overall mining activity will likely decrease as there would be no opportunities to stake new federal claims to offset claim attrition. This alternative would offer no process to address these mineral closures.

4.4.2.1.3. Alternative B

Under Alternative B, 1,076,000 acres would be closed to locatable mineral entry in the Fortymile Subunit. Most closures would be discretionary, with the exception of the “wild” segments of the Fortymile WSR. Closures include the Fortymile WSR Corridor, the Fortymile SRMA, the Fortymile ACEC, ungulate mineral licks, disposal lands, BLM Administrative Sites, Fort Egbert, and the Eagle recreation withdrawal. Additionally, the Sam Patch Creek – Fortymile River watershed would be identified as a High Priority Restoration Watershed and emphasized for restoration.

The mineral closures associated with the Fortymile River would be the most likely to impact locatable minerals. The Fortymile River has historically been known for mining and is considered to have high mineral potential for location. Operating mining claims in the drainage currently exist, but if they were lost by the claimants no additional staking could be made. All closures or restrictions prevent obtaining the minerals and their benefits to society would remain unavailable for the foreseeable future. Additionally, the infrastructure that typically accompanies development would not occur.

The remaining 800,000 acres in the subunit would be open to locatable minerals, including some high mineral potential lands. An estimated total of three large-scale placer, 31 small-scale placer, and 10 suction dredge operations could occur on lands that are available to entry (two large-scale placer, 27 small-scale placer, and seven suction dredge operations already exist). There would be potential beneficial impacts to mining compared to Alternative A due to recommended removal of existing withdrawals.

4.4.2.1.4. Alternative C

Under Alternative C, 623,000 acres in the Fortymile Subunit would be closed to locatable mineral entry. Closed areas include the same areas that are closed under Alternative B, except for a portion of the Fortymile ACEC. Some areas of medium potential would be closed. Additionally, the Sam Patch Creek-Fortymile River watershed would be identified as a High Priority Restoration Watershed. If this watershed were restored, those restored portions would not be available for mining and it would be considered closed for the life of the plan. The 623,000 acres closed to mineral entry would constrain extraction of the minerals and their benefits to society would remain unavailable for the foreseeable future. Additionally, the infrastructure that typically accompanies development would not occur.

The remaining 1,253,000 acres in the subunit would be open to locatable mineral entry, including some high potential lands. An estimated four large-scale placer, 33 small-scale placer, and 14 suction dredge operations could occur on lands that are available (two large-scale placer, 27 small-scale placer, and seven suction dredge operations already exist).

4.4.2.1.5. Alternative D

Under Alternative D, 163,000 acres in the Fortymile Subunit would be closed to locatable mineral entry. Closures include only the “wild” and “recreational” segments of the Fortymile WSR, ungulate mineral licks, disposal lands, BLM Administrative sites, Fort Egbert, and the Eagle recreation withdrawal. One difference from Alternative C would be that “scenic” segments of the Fortymile WSR would be open to mineral location. Effects from the Sam Patch Creek – Fortymile River High Priority Restoration Watershed would be the same as Alternative C. Although this alternative would close much fewer acres than Alternatives B or C, the areas that would be closed contain high mineral potential.

The remaining 1,713,000 acres in the subunit would be open to locatable minerals, including some high potential lands. An estimated four large-scale placer, 40 small-scale placer, and 18 suction dredge operations could occur on lands that are available (two large-scale placer, 27 small-scale placer, and seven suction dredge operations already exist).

4.4.2.1.6. Alternative E (Proposed RMP)

Under Alternative E, 745,000 acres in the Fortymile Subunit would be closed to locatable mineral entry. Closures include the entire Fortymile WSR corridor, the Fortymile and Mosquito Flats ACECs, RCAs, BLM administrative sites, Fort Egbert, and the Eagle recreation withdrawal. As in other alternatives, mineral closures associated with the Fortymile River would be the largest impact. In this area, impacts would be the same as Alternatives B and C. Recommended closures in the Fortymile ACEC would be the same as Alternative C. One change from Alternative C is the closure of the Mosquito Flats ACEC (37,000 acres). This area has medium mineral potential.

The remaining 1,132,000 acres in the subunit would be open to locatable minerals. Estimated mining activity and impacts would be similar to what is described in Alternative B. This would include three large-scale placer, 31 small-scale placer, and 10 suction dredge operations could occur on lands that are available to entry (two large-scale placer, 27 small-scale placer, and seven suction dredge operations already exist).

4.4.2.1.7. Cumulative Impacts

Impacts to locatable minerals that are individually minor may cumulatively reduce exploration and production of commodities from public lands. Factors that affect mineral extraction and prospecting include, but are not limited to, such things as permitting and permitting delays, regulatory policy, public perception and concerns, travel management, transportation, mitigation measures, proximity to sensitive areas (such as ACECs and WSRs), low commodity prices, taxes, and housing and other necessities for workers. Many of these are issues over which the BLM has no control. Most of these issues result in additional costs or permitting delays that can individually or cumulatively impact projects.

Public land that currently has no access could reduce the amount of mineral exploration and development that may occur. Mineral resources on non-BLM lands may not be developed if the adjacent public lands are withdrawn from mineral entry.

Overall, Alternative B would be the most restrictive to mineral developments and could result in the greatest cumulative impacts. It recommends the most acres be maintained as withdrawn from mineral entry, the most areas limited or closed to motorized travel, and the highest protection to other resources. Estimated mining activity and impacts would be similar to what is described in Alternative B. This would include three large-scale placer, 31 small-scale placer, and 10 suction dredge operations could occur on lands that are available to entry (two large-scale placer, 27 small-scale placer, and seven suction dredge operations already exist). Alternative D would have the fewest cumulative impacts.

4.4.2.2. Recreation Fortymile Subunit

Summary of Effects

Effects on recreation management from the proposed alternatives would result in a wide range of possible outcomes. Proper resource management, including site-specific measures to protect healthy, functioning watersheds, riparian areas, and associated fish and wildlife habitats, would result in short- and long-term, beneficial impacts to fish and game related recreation use.

Special designations and management applied to these areas, including ACECs and WSRs, would further protect the region, increasing wildlife numbers that benefit wildlife viewing, hunting, and fishing opportunities. Proposed management in ACECs and WSRs would encourage recreation activities of a more non-motorized, semi-primitive nature. As the size and scope of these special designations increase, opportunities for non-motorized forms of recreation would also increase. Negative effects from these designations would also arise, if additional restrictions were placed on OHV use and other recreational activities.

The delineation of special recreation management area (Fortymile SRMA) would protect and enhance recreational resources while encouraging specific targeted outcomes in these areas. Land, water, and snow based activities would continue to remain the focus in these designations, including the commonly conducted activities of boating and river based recreation, camping, fishing, gathering of edible plants and berries, hiking and backpacking, hobby mineral collecting, and OHV use.

Alternatives C and E best meets the goal of providing for multiple recreation use, while sustaining the recreation-resource base and other sensitive resource values of the region. Alternative B

emphasizes less motorized recreation use in a more primitive setting, while Alternative A offers more motorized recreation use and includes the most acreage for cross-country OHV travel, followed by Alternative D.

Table 4.10. Comparison of Recreation Indicators: Fortymile Subunit

Indicator	Alternative			
	B (acres)	C (acres)	D (acres)	E (acres)
Special Recreation Management Area	798,000	248,000	248,000	248,000
Other BLM Lands	1,077,000	1,628,000	1,628,000	1,628,000
Recreation Setting Character (acres)				
Primitive	0	0	0	0
Semi-Primitive	626,000	144,000	54,000	144,000
Backcountry	162,000	82,000	96,000	82,000
Middlecountry	6,800	11,500	77,000	11,000
Frontcountry	3,400	10,200	14,900	10,000
Rural	840	840	7,640	1,000

4.4.2.2.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Under all alternatives, the effects of forest and woodland products harvest would result in minimal impacts to recreation management. Current levels of firewood collection, commercial harvests, and forest products gathering would continue to be sustained without significant resource damage. However, if significant sales of forest products took place, due to bark beetle infestations or from commercial timber harvests, recreational users would see increased trails, potential dislocation of wildlife, and alteration of scenic viewsheds.

Although the areas open to commercial uses vary between alternatives, the low demand and lack of timber resource would limit these uses and any effects on recreation in all alternatives.

Effects from Wildlife

Wildlife goals to protect and enhance wildlife populations and crucial habitat areas would continue to impact recreation. Through avoidance areas and other restrictions on recreational development including possible seasonal or timing closures, location changes, and limiting the extent of activities or development; wildlife concerns could make certain projects more costly, more difficult if not impossible to accomplish, or may not meet recreation objectives after restrictions are placed on them. Healthy wildlife populations would benefit hunting, wildlife viewing, and trapping which are all generally secondary activities in most RMZs; but placing access restrictions could offset that benefit to participate in those activities. The biggest impacts to recreation from wildlife would be in limiting potential motorized and non-motorized recreational opportunities.

The prohibition of the use of domestic goats, sheep and camelids in Dall sheep habitat could impact recreation use by users seeking to use these animals as pack animals as part of their recreation experience. It is anticipated that this is a small user group but interest has been growing in the lower 48 states.

Effects from Recreation

Under all alternatives, management actions would continue to provide for multiple recreation uses, including a wide-range of structured opportunities that produce specific targeted outcomes (such as activities, experiences, benefits, and settings). The Eastern Interior FO would continue to manage the 392 miles of river segments that comprise the Fortymile WSR, to preserve and enhance their resource values. Management would also continue for the three developed campgrounds, seven waysides, and one National Historic Landmark that presently exist within the Subunit. Together, these actions would directly affect recreation management by ensuring that land- and water-based recreational opportunities continue to exist in both designated and undesignated areas.

Special Recreation Permits would continue to be issued as appropriate for commercial, competitive, and special event use, allowing managers to provide for safe and enjoyable recreation opportunities at fair and allowable levels. This would minimize user conflicts while ensuring that recreation activity levels do not negatively impact the recreation-resource base and other sensitive resource values of the region.

Under the A alternative, winter use (October 15 through April 30) of snowmobiles of 1,500 pounds GVWR and less would be allowed and under Alternatives B, C, D and E winter use (October 15 through April 30) of snowmobiles of 1,000 pounds curb weight and less would be allowed, nearly the same as Alternative A, providing opportunities for recreational users during the winter months. During the summer months, all forms of non-motorized use would generally be allowed, except to protect specific resource values, preserve public safety, and maintain identified recreation opportunities.

Effects from Salable Minerals

Most salable mineral sites (such as gravel pits) are located within or adjacent to roads and highways. As a result, impacts from salable mineral management have little effect on recreational experiences. Where gravel pit development occurs, reduced viewsheds would inhibit the quality of visual resources. However, gravel pits would also provide users with de-facto parking areas and areas for motorized play.

Effects from Travel Management

Under all alternatives, travel management actions would provide for a range of motorized and non-motorized recreation experiences, while protecting resource values and minimizing user conflicts. This comprehensive approach to travel management would allow the BLM to sustain and enhance recreation opportunities and experiences, visitor access and safety, and resource conservation.

All forms of non-motorized use would be allowed, providing users with opportunities for float-boating (including rafting, kayaking, and canoeing), hiking, biking, and horseback riding. Winter use (October 15 through April 30) of snowmobiles of 1,500 pounds GVWR (Alternative A), and 1,000 pounds Cub Weight (Alternatives B, C, D and E) or less would be allowed, providing opportunities for recreational users during the winter months. The use of aircraft would also be allowed, subject to reasonable provisions to protect the values of the Fortymile WSR.

4.4.2.2.2. Alternative A (No Action)

Effects from Visual Resources

Under this alternative, no VRM classes have been established, except in the “wild” segments of the Fortymile WSR, which is managed as VRM Class I by policy. The lack of VRM class designations would have a limited effect on recreation as the effects to scenic quality would be evaluated and mitigated for any proposed project.

Effects from Lands and Realty

Under Alternative A, no lands are specifically identified for disposal or acquisition and there would be no impact to recreation from land tenure actions.

Land use authorizations, such as leases and permits, could potentially result in additional development that may adversely affect those areas being managed for Primitive or Semi-Primitive recreation experiences. These effects may include impacts to visual resources, increased visitor encounters, and a diminished recreation experience. On the other hand, land use authorizations could also result in increased access opportunities, for those seeking a motorized experience.

Maintenance of the withdrawal of the Wade Creek “recreational” segment of the Fortymile WSR would allow the BLM to manage this area for recreational gold panning.

Under Alternative A, long-term camping permits for commercial purposes (i.e., camping in association with mining on state mining claims adjacent to BLM lands) is allowed in the “scenic” and “recreational” segments of the Fortymile WSR Corridor, but not the “wild” segment. The effect of this decision is that operators working state mining claims in the “wild” segments of the river must camp on state land, or below ordinary high water. As a result, the entire camp, as well as the suction dredging operation, is visible to recreational users of the “wild” segments of the Fortymile WSR, affecting the scenic quality of the experience. This may negatively effect those users anticipating a Primitive recreational experience on the “wild” segments of the river.

Effects from Locatable Minerals

Although no new lands would be opened to mineral entry in Alternative A, some mining would continue to occur on valid existing claims. Six suction dredge operations, 27 small-scale placer mine operations, and two large-scale placer mine operations are anticipated. Under all alternatives, mineral development through the use of suction dredging or placer mining activities, has the potential to affect recreation management, particularly if development occurs in areas that provide Semi-Primitive recreation experiences. The development of necessary infrastructure for mineral activities could compromise the experiences of those recreation users whose expectations include a high degree of solitude and tranquility, within a naturally-appearing landscape. Adverse impacts on recreation users could also arise from intrusive noise and altered viewsheds produced by mining equipment and OHVs that are used in mining operations. Small mineral development may enhance recreational access by providing for remote airstrips and localized OHV trails.

Effects from Recreation

In addition to those effects discussed under the Effects Common to All Alternatives section above, the BLM would continue to manage only one SRMA, the Fortymile River (249,000 acres), under this alternative. Facility enhancements (such as roads, toilets, boat ramps, and parking areas) may be added to these areas to accommodate increasing recreation demand. All public lands outside of the Fortymile River SRMA would be managed as other BLM lands (1,827,000 acres). Management outside the SRMA would generally be custodial action only, and would result in less facility enhancements (such as trails or interpretive panels).

Effects from Travel Management

This alternative provides the most motorized public access of any of the alternatives, as OHV use would continue to be managed in accordance with existing OHV limitations. Travel within the Fortymile WSR Corridor would be limited to vehicles 1,500 pounds GVWR and less, while travel outside of the corridor would remain generally unrestricted, as there are no OHV designations in place.

Allowing this level of continued OHV use would not address resource and user conflict issues and could result in emergency closures to protect the recreation-resource base and other sensitive resource values of the region. These actions could also result in long-term, detrimental impacts to scenic viewsheds that enhance the quality of recreational experiences for other recreation users. Thus, while this alternative would offer the most opportunities for recreational activities that involve the use of motorized travel, including hunting and OHV riding; fewer opportunities would exist for recreational users seeking a Semi-Primitive, non-motorized type of experience, characterized by a high degree of solitude and tranquility, within a naturally-appearing landscape.

In Alternative A motorized boat travel is allowed on all designated navigable sections of the Fortymile WSR. Motorized use is prohibited on the non-navigable sections except under the provisions of 43 CFR 3809. By not allowing motorized boat use on the non-navigable sections opportunities for a more primitive experience are greatly enhanced. Motorized use on the “scenic” segments of the river do detract from the naturalness enjoyed by most recreational users, but is not managed to the same degree of primitive as the non-navigable sections. The sounds and sights of motorboats and other watercraft passing float-boat users does incur an increased impact on the recreational experience, but is generally temporary in nature. The overall impacts are expected to be light.

Effects from Special Designations

There would be no impacts from ACECs, as no areas are currently being managed for ACECs under Alternative A.

Under all alternatives, the 392 miles of river that comprise the Fortymile WSR would continue to be managed to preserve and enhance their Outstandingly Remarkable Values. This designation would provide long-term, beneficial impacts to those recreation users seeking land- and water-based recreation activities in these areas.

4.4.2.2.3. Alternative B

Effects from Visual Resources

Under this alternative, the “wild” segments of the Fortymile River would be identified as VRM Class I, the “scenic” segments would be Class II, and the “recreational” segments would be Class III. RMZs with a RSC Class of Semi-Primitive or Backcountry would be Class II, while Middlecountry, Frontcountry, or Rural would be Class III. All remaining BLM-managed lands would be assigned Class IV. These visual resource management decisions would have long-term, beneficial impacts on recreational activities that include scenic qualities as part of the experience. Minor effects of visual resource management may result if restrictions are placed on facility development or OHV use, in areas that possess increasing recreation demands.

Effects from Wilderness Characteristics

For those individuals who seek a primitive and unconfined recreation experience, areas identified to be maintained for wilderness values would be protected and preserved to ensure that they continue to remain available for appropriate uses (such as hiking, sightseeing, photography) by present and future recreation users. Under this alternative, forty-seven percent of the subunit (994,000 acres), within the Fortymile ACEC and on Wild and Scenic River segments that do not contain mining claims, would be managed to maintain wilderness characteristics.

Effects from Land and Realty Actions

Alternative B identifies numerous parcels (Appendix G, *Land Tenure*) for disposal. All of the lands proposed for disposal are isolated from other BLM lands and not easily managed and disposal would not decrease the area of public lands available for recreation activities. The acquisition of private land inholdings from willing sellers within areas identified as Zone 1, including lands in the Fortymile WSR Corridor and Fortymile ACEC, could provide long-term, beneficial impacts to those recreation users seeking land- and water-based recreation experiences in these areas.

The authorization of long-term camping permits for commercial purposes would not be allowed in “wild,” “scenic,” or “recreational” segments of the Fortymile WSR Corridor. This restriction would impact the scenic viewshed and Primitive recreational experiences on any segment of the river where suction dredging was occurring on state mining claims. The effects would be somewhat higher than under Alternative A.

Effects from Locatable Minerals

Under Alternative B, impacts to recreation from locatable minerals would be similar to, but somewhat greater than those discussed under Alternative A as mining activity increases in response to opening additional lands to mineral entry. Approximately 977,000 acres would be opened to locatable mineral entry and 10 suction dredge operations, 31 small-scale placer mine operations, and three large-scale placer mine operations are expected to develop within the Fortymile Subunit. The areas that currently have the most concentrated recreational use, the Fortymile WSR Corridor, Fort Egbert, and the Eagle Recreational withdrawal, would remain closed to new mineral entry. Additional effects to recreation would be in areas of more dispersed recreation use.

Closure of 1,100,000 acres to locatable mineral entry, including the Fortymile SRMA would help to maintain the RSC setting prescriptions identified for the recreation management of all physical, social, and administrative settings of the region. Withdrawal of the “recreational” segment of the Fortymile (Wade Creek) would allow the BLM to manage this area for recreational gold panning.

Effects from Recreation

In addition to those effects discussed under the Effects Common to All Alternatives section above, the BLM would continue to manage one SRMA (792,000 acres) under Alternative B. When compared to Alternative A, the size of the SRMA would increase by 318 percent.

Management actions would provide for multiple recreation activities within a variety of RSC settings. The BLM would manage 626,000 acres as Semi-Primitive, 162,000 acres as Backcountry, 6,800 acres as Middlecountry, 3,400 acres as Frontcountry, and 840 acres as Rural. Semi-Primitive (seventy-eight percent) accounts for the largest setting, while Frontcountry (0.4 percent) and Rural (0.1 percent) represent the smallest settings. These percentages are indicative of the management emphasis for recreation activities on BLM-managed lands. A much greater

portion of the Subunit would be reserved for the Semi-Primitive experiences of non-motorized use, when compared to the more Frontcountry experiences of motorized use. Facility structures would be primarily limited to rustic and rudimentary buildings, generally constructed using natural materials, and designed to blend with surrounding landscape. These management decisions would affect recreation by providing high-quality recreation opportunities for those users who desire an experience characterized by solitude, tranquility, and self-reliance.

Effects from Travel Management

Under Alternative B, travel management prescriptions for the Semi-Primitive Zones (Map 44) would require a permit or approved plan of operation for all forms of OHV use, except the winter use of snowmobiles of 1,000 pounds curb weight and less. As a result, more area would be made available for recreational users seeking primitive, non-motorized forms of recreation, including hiking, horseback riding, and float-boating opportunities. In contrast, less area would be available for those users seeking motorized forms of recreation, including boating and OHV use.

Travel within BLM-managed lands outside the SRMA, Backcountry, Middlecountry, Frontcountry, and Rural Zones (Map 44) would be limited to the summer-use of OHVs (weighing 1,500 pounds curb weight and less) on existing routes only, and the winter use of snowmobiles of 1,000 pounds curb weight and less. All other forms of OHV use within these zones would require a permit or approved plan of operation. These management actions, while benefiting the effect on visual resources (through limiting the establishment of trails), would negatively impact those users who utilize OHVs for accessing remote areas, and by those retrieving game.

Under Alternative B, all forms of non-motorized use would be allowed. Motorboat use would generally be allowed without specific authorization consistent with ANILCA sections 1110(a) and 811. Airboats, hovercraft, and personal watercraft would not be permitted in the following non-navigable river segments: the North Fork above the Kink, the Middle Fork, Champion Creek, Joseph Creek, Mosquito Fork above Ingle Creek, and Gold Run suitable segments. The closure procedures under 43 CFR 36.11(h) would be followed. The airboat, hovercraft, and personal watercraft closures in the Semi-Primitive North Fork Fortymile and Mosquito Fork Fortymile RMZs would enhance the opportunities which they are designated for. Motorboat use in these areas would cause less impact than the louder airboat and hovercraft vessels, but could still create temporary impacts to recreational float-boaters seeking a Semi-Primitive experience. The long-term impacts are expected to be fairly minimal due to the natural barriers and limitations of vessels to access these sections of the river. On the remaining sections of the river in both Semi-Primitive and Backcountry RMZs, the allowance of motorboats, airboats, hovercrafts, and personal watercraft would continue to create temporary sound and sight impacts to recreational users; but the setting prescriptions would offer greater allowances for these impacts. Overall impacts from motorized use on the river is not anticipated to change much from the current situation.

Overall, Alternative B offers the least opportunity for recreational activities that involve the use of motorized travel, compared to all other alternatives.

Effects from Special Designations

Under this alternative, 690,000 acres would be designated as the Fortymile ACEC to protect caribou and Dall sheep habitat. This ACEC designation would maintain or protect wildlife habitat, potentially increasing wildlife numbers that have beneficial impacts on wildlife viewing

and hunting. Negative effects of ACEC designation may also result, if additional restrictions are placed on OHV use and other recreational activities.

Under Alternative B, two eligible river segments (Gold Run and Dome Creek) would be recommended as suitable for designation under the WSR Act. If they were designated by Congress, the effect of these inclusions into the WSR system would ensure the protection and enhancement of the outstandingly remarkable historic values for which the rivers were identified, providing long-term, beneficial experiences for those individuals seeking historical and cultural appreciation opportunities. Effects from the Fortymile WSR designation would be the same as Alternative A.

4.4.2.2.4. Alternative C

Effects from Visual Resources

Effects would be the same as discussed under Alternative B, except less area would be designated as VRM Class I and II, and more area in Class III and IV. In addition, "recreational" segments of the Fortymile River that were identified as Class II, under Alternative B, are now identified Class IV. These visual resource management decisions would result in fewer restrictions being placed on facility development or OHV use in areas of increasing recreation demand. However, fewer areas would be protected for recreational activities that include scenic qualities as part of the experience.

Effects from Wilderness Characteristics

Effects would be the same as discussed under Alternative B, except less area would be managed to maintain the wilderness characteristics of naturalness and solitude, or primitive and unconfined recreation. Under this alternative, twenty-three percent of the Subunit (487,000 acres), within non-navigable "wild" river segments, including the North Fork above the Kink and the Mosquito Fork, would be managed to maintain wilderness characteristics.

Effects from Land and Realty Actions

Effects from land tenure decisions (such as disposals and acquisitions) would be the same as discussed under Alternative B.

Under Alternative C, the authorization of long-term camping permits for commercial purposes would be allowed in the "scenic" and "recreational" segments of the Fortymile WSR Corridor, but not the "wild" segment. The effect of this decision would be the same as Alternative A.

Effects from Locatable Minerals

Impacts to recreation from locatable minerals would be similar to, but slightly greater than those discussed under Alternatives A and B. Under Alternative C, 1,496,000 acres would be opened to locatable mineral entry and approximately 14 suction dredge operations, 33 small-scale placer mine operations, and three large-scale placer mine operations are expected to occur.

As in Alternative B, the Fortymile WSR, Fort Egbert, and the Eagle Recreational withdrawal would remain closed to new mineral entry. Closure of 608,000 acres to locatable minerals would enhance recreation by protecting caribou and Dall sheep habitat, helping to preserve both the Outstandingly Remarkable Values of the Fortymile WSR and recreation opportunity settings, and allow the BLM to manage the "recreational" segment of the Fortymile WSR for recreational gold panning.

Effects from Recreation

In addition to those effects discussed under the Effects Common to All Alternatives section above, the BLM would continue to manage only one SRMA (249,000 acres) under this alternative. Thus, while similar in size to Alternative A, the SRMA designation for this alternative would decrease by 318 percent, when compared to Alternative B. As a result, more area would be managed outside the SRMA, resulting in fewer facility enhancements and fewer restrictions on OHV use. Accordingly, slightly more motorized opportunities would be available due to the increased area of lands outside the SRMA.

Similar to Alternative B, the BLM would manage for multiple recreation activities within a variety of RSC settings. This alternative would recognize 144,000 acres as Semi-Primitive, 82,000 acres as Backcountry, 11,500 acres as Middlecountry, 10,200 acres as Frontcountry, and 840 acres as Rural. Like Alternative B, Semi-Primitive (fifty-eight percent) accounts for the largest setting, while Frontcountry (four percent) and Rural (0.3 percent) represent the smallest setting; effects on recreation from these designations are similar to those described under Alternative B.

Effects from Travel Management

Effects would be similar to Alternative B, except more area would be made available for recreational activities that involve the summer-use of motorized travel. Travel on lands outside the SRMA, and within Backcountry, Middlecountry, Frontcountry, and Rural Zones (3, 4, 5, 6, 7, 8, 9 and 10) would be limited to summer-use of OHVs (weighing 1,500 pounds curb weight and less) on existing routes only, except for game retrieval. This would provide a direct benefit to recreational hunters who could retrieve legally harvested big-game animals off of pre-existing routes.

Effects from Special Designation

Under Alternative C, 554,600 acres would be designated as the Fortymile ACEC. Effects would be the similar as those discussed under Alternative B, except less area would be designated to protect caribou habitat.

Effects from the Fortymile WSR designation would be the same as Alternative A. No additional river segments would be recommended for designation, thus there would be no beneficial effects from designation of new rivers.

4.4.2.2.5. Alternative D

Effects from Visual Resources

Effects would be similar to Alternative C, except more area is classified as VRM Class III and IV, and less area in Class II. These decisions would result in less protection of important viewsheds for recreation activities that include scenic qualities as part of the experience. In contrast, fewer restrictions would be placed on facility development or OHV use in areas that possess increasing recreation demand.

Effects from Wilderness Characteristics

Effects are expected to be very minimal in Alternative D. 54,000 acres are identified to be maintained as lands with wilderness characteristics or 2.5 percent of the area. The majority of these areas would include the Semi-Primitive RMZs in which compatible objects could be attained

Effects from Land and Realty Actions

Effects from land tenure decisions (such as disposals and acquisitions) would be the same as discussed under Alternative B.

Under Alternative D, the authorization of long-term camping permits for commercial purposes would be allowed in the “wild,” “scenic,” and “recreational” segments of the Fortymile WSR Corridor, allowing for camps associated with suction dredging on state mining claims to be located on the uplands in all river segments. Recreational users of the river would still see the suction dredging operation, but the camps would be screened from view. Impacts to scenic quality would be reduced compared to Alternatives A, B, and C. The recreational experience on the “wild” segments of the river would likely be of a more primitive nature.

Effects from Locatable Minerals

Under Alternative D 1,922,000 acres would be open to locatable mineral entry and approximately 18 suction dredge operations, 34 small-scale placer mine operations, and three large-scale placer mine operations are expected to occur. The effects on recreation from locatable mineral entry would be similar to, but slightly greater than under Alternatives A, B, and C. The “scenic” segments of the Fortymile WSR would be opened to new mineral entry. Unlike the other alternatives, there would be effects within portions of the Fortymile WSR Corridor. If mining occurred, this could negatively affect recreation opportunity and settings. Closure of 156,000 acres to locatable minerals would enhance recreation in these areas.

Effects from Recreation

In addition to those effects discussed under the Effects Common to All Alternatives section 4.4.2.2 above, the BLM would continue to manage one SRMA (249,000 acres) under this alternative. While the SRMA designation for this alternative would be identical in size to Alternatives A and C, it would be 318 percent smaller than Alternative B.

Similar to Alternatives B and C, the BLM would continue to manage for multiple recreation activities within a variety of RSC settings. This alternative would recognize 54,000 acres as Semi-Primitive, 96,000 acres as Backcountry, 77,000 acres as Middlecountry, 14,900 acres as Frontcountry, and 7,640 acres as Rural. Consequently, a much greater portion of the Subunit is reserved for the Backcountry and Middlecountry activities of motorized use, when compared to the more Primitive activities of non-motorized use.

Effects from Travel Management

Effects would be similar to Alternative B, except more area would be made available for recreational activities that involve the summer-use of motorized travel. The Semi-Primitive Zone for this alternative, which limits summer motorized use except by permit, encompasses only three percent of the subunit (54,000 acres), compared to six percent in Alternative C, thirty percent in Alternative B and zero percent in Alternative A. These decisions could potentially diminish the recreational experience of users seeking a primitive, non-motorized type of experience, while increasing the area available for motorized use. Allowing this level of OHV use could potentially result in an increased occurrence of user conflict issues.

Effects from Special Designations

Under Alternative D, 554,000 acres would be designated as the Fortymile ACEC. Effects would be the similar as those discussed under Alternative B, except management in the ACEC would be less protective of caribou and Dall sheep habitat. Thus, less potential would exist for increasing wildlife numbers that have beneficial impacts on wildlife viewing and hunting.

Effects from WSR would be the same as Alternative C.

4.4.2.2.6. Alternative E (Proposed RMP)

Effects from Visual Resources

Effects same as discussed in Alternative C.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over the other resource values and multiple use. Wilderness characteristics would be maintained on 556,000 acres by limiting activities that impact wilderness characters of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation. OHV use would be allowed on all lands subject to weight limitations. The remaining 1,321,00 acres would be managed for other resources as priority over protecting wilderness characteristics.

Effects from Land and Realty Actions

Effects of land disposal would be the same as Alternative B. The effects of authorization of long-term camping permits for commercial purposes would be the same as Alternative D.

Effects from Locatable Minerals

Similar to Alternative B, impacts to recreation from locatable minerals would be similar to, but somewhat greater than those discussed under Alternative A as mining activity increases in response to opening additional lands to mineral entry. Approximately 1,132,000 acres would be opened to locatable mineral entry and 10 suction dredge operations, 31 small-scale placer mine operations, and three large-scale placer mine operations are expected to develop within the Fortymile Subunit. The areas that currently have the most concentrated recreational use, the Fortymile WSR Corridor, Fort Egbert, and the Eagle Recreational withdrawal, would remain closed to new mineral entry. Additional effects to recreation would be in areas of more dispersed recreation use.

Closure of 745,000 acres to locatable mineral entry, including the Fortymile SRMA would help to maintain the RSC setting prescriptions identified for the recreation management of all physical, social, and administrative settings of the region. Withdrawal of the “recreational” segment of the Fortymile (Wade Creek) would allow the BLM to manage this area for recreational gold panning.

Effects from Recreation

In addition to those effects discussed under the Effects Common to All Alternatives section, the BLM would continue to manage only one SRMA (248,000 acres) under this alternative with five Recreation Management Zones (RMZs) representing a full spectrum of user experiences. BLM-managed lands not designated as an SRMA encompasses 1,628,000 acres.

In this alternative, 144,000 acres will be managed as Semi-Primitive with an emphasis on non-motorized recreation, less infrastructure and small group sizes. Effects would include less facility improvements such as toilets or large. Management for Backcountry and Middlecountry with an emphasis on a mix of motorized and non-motorized uses encompasses 93,000 acres, while Frontcountry and Rural with an emphasis on build facilities and motorized trail access encompasses 11,000 acres. Effects will include more facility improvements such as toilet facilities, interpretive signage, larger trailheads, campgrounds and sites to accommodate larger group sizes. The balance of the planning area outside of the SRMA would not have a recreational emphasis and management would largely be custodial in nature and would result in less facility enhancements such as trails or interpretive panels.

The majority of recreational use in the SRMA include road travelers who seek facilities or other accommodations. The management of the Backcountry, Middlecountry, Frontcountry and Rural RMZs will provide a positive benefit to the users in these areas. The user need for toilet facilities, interpretive signs and improved trailheads will alleviate resource damage from high concentrations. Recreational users interested in a more primitive recreational experience are more likely to be further from the roadside facilities and will not want improved trailheads or permanent toilet facilities.

Effects from Travel Management

This alternative provides the second most public access of all the alternatives, as OHV use would continue to be managed in accordance with existing OHV limitations with the exceptions of the ACECs. Travel within the Fortymile WSR Corridor would be limited to 1,500 pounds curb weight or less on existing trails while travel outside the corridor will be limited to 1,500 pounds curb weight and cross country travel will be allowed. The entire subunit is open to snowmobile travel with a limitation of 1,000 pounds curb weight.

In this alternative, the majority of the subunit is open to some sort of motorized summer recreational travel with the exception of the Mosquito Flats ACEC. This alternative emphasizes opportunities for hunting, OHV riding while few opportunities would exist for recreational users seeking a non-motorized type of experience characterized by a high degree of solitude and tranquility, within the a naturally appearing landscape.

In Alternative E, all forms of motorized boat travel including hovercraft and airboats are allowed all portions of the Fortymile WSR. Motorized use on the “scenic” and “wild” segments of the river do detract from the naturalness enjoyed by most recreational users. Recreational floaters currently using the “scenic” segments do come into contact with active suction dredge operations on the river so impacts from mechanized noises should be minimal from current conditions in these segments from current conditions. Floaters on the “wild” segments will experience a one-hundred percent change in conditions from the current conditions with respect to motorized boat travel. The limitations in typography, access and water levels in most sections will minimized the occurrence of user conflicts. Sound disturbance will likely be the primary impact and will be temporary in time. The overall impacts are expected to be light.

Effects from Special Designations

Under this alternative, 362,000 acres would be designated as the Fortymile ACEC to protect caribou and Dall sheep habitat. This ACEC designation would maintain or protect wildlife habitat, potentially increasing wildlife numbers that have beneficial impacts on wildlife viewing and hunting. Negative effects of Fortymile ACEC designation may also result, if additional

restrictions are placed on OHV use and other recreational activities. The Mosquito Flats ACEC would encompass 37,000 acres to protect wetland habitat. Negative effects of this ACEC designation include restriction on summer motorized access. Positive effects of this designation include the protection of a sensitive wetland environment used for moose hunting. Recreational users can expect less user conflict.

4.4.2.2.7. Cumulative Effects

The effects of past, present and future actions, including the demand for recreational use, changes to the landscape as a result of surface-disturbing activities, and area closures or restrictions for resource protection, could affect recreation management in the Fortymile Subunit.

The demand for recreational use in the Fortymile Subunit is anticipated to increase by ten to fifteen percent over the life of the plan, due to general population increases and increases in recreation-related technology. This use would occur for both motorized (such as OHV use, including snowmobiles) and non-motorized (such as hiking, backpacking, hunting, float-boating, river-based recreation, camping, fishing, gathering of edible plants and berries) activities, resulting in an increase in resource damage and conflicts among recreationists involved in these activities.

Surface-disturbances resulting from forestry and mineral activities could cumulatively affect recreational users if activities were concentrated in heavily recreated areas and if activities overlapped in duration. Effects to recreation as a result of these cumulative effects may include the potential dislocation of wildlife for hunting and viewing purposes, and/or the alteration of scenic viewsheds.

Special designation, including ACECs and WSRs, would further protect the Fortymile Subunit, by increasing wildlife number that benefit wildlife viewing, hunting, and fishing opportunities. As the size and scope of these areas increase, opportunities for land- and water-based recreation uses that incorporate scenic viewsheds as part of the experience would also increase. However, as areas that require special management attention, to prevent irreparable damage to historic, cultural and scenic values, the need for additional restrictions could limit OHV use and other recreational activities.

Implementing any of the alternatives would not contribute to a significant change to recreational opportunities on public lands.

4.4.2.3. Travel Management Fortymile Subunit

Summary of Effects

Effects on travel management from the proposed alternatives would result in a wide range of possible outcomes. Site-specific measures to protect and preserve the recreation-resource base and other sensitive resource values, including fish and wildlife, soil, water, Special Status Species, and cultural and paleontological resources, could result in restrictions or emergency closures. Surface-disturbing activities, caused by forestry and mineral actions, could affect travel management through the expansion of the existing transportation network.

Alternative C would provide the greatest range of motorized and non-motorized recreation experiences, while protecting area resources and minimizing user conflicts. It would be followed

by Alternative B, E, then D, with Alternative A having the most potential for resource impacts and conflict among users.

Table 4.11. Fortymile: Comparison of OHV Designations

Area Designation *	Alternative									
	A		B		C		D		E	
	Acres	%	Acres	%*	Acres	%*	Acres	%*	Acres	%*
Year-round										
Undesignated	1,628,000	87	0	0	0	0	0	0	0	0
Open	0	0	0	0	0	0	0	0	0	0
Closed	0	0	0	0	0	0	0	0	0	0
Limited	248,000	13	1,876,000	100	1,876,000	100	1,876,000	100	1,876,000	100
Winter (October 15 through April 30)										
Limited: Cross-country use of vehicles 1,000 pounds curb weight and less allowed.	248,000 (1,500 lbs. GVWR and less)	13	1,876,000	100	1,876,000	100	1,876,000	100	1,876,000	100
Summer (May 1 through October 14)										
Limited: Cross-country use of vehicles 1,500 pounds curb weight and less allowed.	248,000 (1,500 lbs. GVWR and less)	13	0	0	0	0	1,822,000	97	248,000	13
Limited: Use of vehicles 1,500 pounds curb weight and less, limited to existing routes (except for game retrieval).	0	0	0	0	1,732,000	92	0	0	0	0
Limited: use of vehicles 1,500 pounds curb weight and less, limited to existing routes.	0	0	1,250,000	67	0	0	0	0	0	0
Limited: Closed to summer OHV use.	0	0	626,000	33	144,000	8	54,000	3	0	0

*Percent of BLM-managed lands (1,876,000 acres) within the Fortymile Subunit.

4.4.2.3.1. Effects Common to All Alternatives

Effects from Land and Realty Actions

Under all alternatives, land use authorizations, such as leases and permits, could potentially result in additional development that may adversely affect those areas being managed for Primitive or Semi-Primitive recreation experiences. These effects may include impacts to visual resources, increased visitor encounters, and a diminished travel experience. Alternatively, such development

could increase access to BLM lands. Effects would likely be minimal under all alternatives due to the lack of land use authorizations anticipated and the remote nature of many BLM lands.

Land tenure actions (disposal or acquisition of lands) would have little effect under any alternative. Although lands are identified for disposal under Alternatives B, C, D, and E, all of the lands proposed for disposal are small parcels that are isolated from other BLM lands. Land disposal would not substantially decrease the area of public lands available for travel activities.

Effects from Locatable Minerals

Under all alternatives, mineral development through the use of suction dredging or placer mining activities, has the potential to affect travel and transportation management through the expansion of the existing route network. The construction of winter roads and trails for mineral development would provide a direct benefit to OHV users through the enhancement of public access opportunities. These effects would be the highest under Alternatives C, D, and E, and the lowest under Alternatives A and B.

Effects from Travel Management

Under all alternatives, travel management actions would continue to provide for a range of motorized and non-motorized recreation experiences, while protecting resource values and minimizing user conflicts. This comprehensive approach to travel management would allow the BLM to sustain and enhance travel opportunities and experiences, visitor access and safety, and resource conservation throughout all alternatives.

Although it was not practical to define or delineate a comprehensive travel management network during the land use planning process (due to incomplete route data, size, and complexity of the area), approximately 350 miles of existing and recently used summer routes were identified for continued management in the Fortymile Subunit (Maps 44, 45, 46, and 47). Since all public lands are required to have off-highway vehicle area designations, Travel Management Zones (TMZs) were identified as *open*, *limited*, or *closed* under all alternatives. Areas identified as Open, permit vehicle use at all times, anywhere in the area subject to operating regulations and vehicle standards, however no areas in this subunit would be Open. Limited designations would restrict motorized vehicles to existing routes, weight, and/or season of use (Alternatives A, B, C, D, and E). No areas will be classified as Closed within the Subunit; prohibiting off-road vehicle use year round.

Under all alternatives, non-motorized travel (e.g., float-boating, pedestrian, equestrian, and mechanized uses such as mountain bikes) would continue to be allowed on all BLM lands in the Fortymile Subunit (1,876,000 acres). There would be no change from current management, and opportunities would continue for visitors who access public lands by float-boat (including rafts, kayaks, and canoes), foot, horse, or bicycle.

Over-snow motorized travel (snowmobiles) would be assigned a Limited designation for all BLM-managed lands in the subunit, maintaining travel opportunities for visitors during the winter months. Limitations to travel by snowmobiles include a weight restriction of 1,000 pounds curb weight and less, and cross-country travel is allowed under all alternatives. Winter use of snowmobiles is generally restricted to between October 15 through April 30, though these dates could be extended or reduced on either end due to changing weather conditions.

Fixed-wing and helicopter access will remain largely unregulated in the Fortymile Subunit, unless specifically addressed through the development of a Recreation Activity Management Plan, ACEC Management Plan, or through additional regulations.

Effects from Special Designations

Under all alternatives, the Fortymile WSR (392 miles), as designated through ANILCA, would continue to be managed pursuant to the WSRA. Management of the river, per BLM guidance, would impact travel in the “wild” segments where the construction of new roads, primitive roads, trails, or other provisions for overland motorized travel would not be permitted (BLM 6400 Manual).

4.4.2.3.2. Alternative A (No Action)

Effects from Forest and Woodland Products

Current levels of firewood collection, commercial harvests, and forest products gathering have minimal effects on travel and transportation management. Applications for forest and timber projects are considered throughout the subunit. On the rare occasion that permits are issued, monitoring is done to ensure that the authorized amounts, locations, and stipulations of the permit have been followed. Proliferation of routes could occur, but stipulations for winter cutting or walk-in only would limit this impact. This could affect travel management through the expansion of the existing transportation network or if restrictions or emergency closures became necessary, to mitigate impacts to damaged areas.

Effects from Recreation

This alternative provides the most motorized public access of any of the alternatives, as OHV use would continue to be managed in accordance with existing OHV limitations. Travel within the Fortymile WSR Corridor would be limited to vehicles 1,500 pounds GVWR and less, while travel outside of the corridor would remain unrestricted, as there are no OHV designations in place. Thus, while this alternative would offer the most opportunities for recreational activities that involve the use of motorized travel, including hunting and OHV riding; fewer opportunities would exist for recreational users seeking a primitive, non-motorized type of experience.

Effects from Travel Management

This alternative would provide the most motorized and mechanized public access of any of the alternatives, as travel and transportation would continue to recognize 1,628,000 acres (eighty-seven percent) as “unrestricted” and 248,000 acres (thirteen percent) as Limited. With no OHV designation in place outside of the Fortymile WSR Corridor, this alternative would provide the greatest opportunity for those users seeking cross-country motorized activities. Travel within the Fortymile WSR Corridor would continue to be limited to vehicles 1,500 pounds GVWR and less, as specified in the Fortymile River Management Plan (BLM 1983a). The Fortymile Management Framework Plan limited winter use to vehicles weighing 6,000 pounds or less and summer use to existing roads or trails.

For those travelers seeking non-motorized forms of transportation, the Fortymile Subunit would continue to be managed in support of its many waterways and non-motorized recreation trails, to provide opportunities of a more primitive nature. Motorized boat use would continue

to be restricted on all non-navigable “wild” segments of the Fortymile WSR except under the provisions of 43 CFR 3809.

4.4.2.3.3. Alternative B

Effects from Forest and Woodland Products

Effects would be similar to those identified under Alternative A, except this alternative would restrict uses in some areas. Personal use of timber, commercial/salvage timber sales, and commercial use of forest products would not be allowed within the Fortymile WSR Corridor, the Eagle Recreational Withdrawal, and the Fort Egbert Historic Site. The potential for additional access routes or emergency closures would be lower. As in Alternative A, impacts would be reduced through permitting stipulations and monitoring.

Effects from Recreation

The RSC setting provides a framework for identifying the types of recreation activities that the public might desire, which is directly related to the travel and transportation management opportunities available in those areas. The RSC setting for this alternative would maintain seventy-eight percent of the Fortymile SRMA as available to non-motorized recreation opportunities and the winter-use of snowmobiles (1,000 pounds curb weight and less) (626,000 acres Semi-Primitive). The remaining twenty-two percent (162,000 acres Backcountry, 6,800 acres Middlecountry, 3,400 acres Frontcountry, and 840 acres Rural) would remain limited (i.e., 1,500 pounds curb weight and less, existing routes) to summer motorized-opportunities and would encourage a wide-variety of recreation uses and activities. Since RMZs and TMZs are delineated with the same boundaries under each alternative, impacts from recreation on travel and transportation management are expected to be minimal, as zones were designed to interact with one another.

Effects from Travel Management

All BLM lands in the Fortymile Subunit would be designated as limited for OHV use. This would restrict OHV use to existing routes and vehicle weight (1,500 pounds curb weight and less) within 1,250,000 acres (sixty-seven percent) during the summer. Approximately 626,000 acres of Semi-Primitive RSC class would be closed to summer use. Weight restrictions would be maintained for the entire subunit (1,876,000 acres) during the winter months. Thus, unlike Alternative A, this alternative would eliminate the free and unrestricted use of OHVs.

Restrictions would impact users by limiting OHV use where no limits have been in place before. Through limitations imposed on the summer-use of OHVs, there may be areas that users will have difficulty reaching (such as for game-retrieval) due to lack of existing routes. Consequently, this alternative would impact OHV and travel use more than any other alternative, as it would have a greater affect on non-local users who visit the area during the non-winter months when OHV use is most restricted.

Under Alternative B motorized boats with the exception of airboats, hovercraft, and personal watercraft would be allowed on all sections of the Fortymile WSR consistent with ANILCA sections 1110(a) and 811. Airboats, hovercraft, and personal watercraft would continue to be restricted on the non-navigable “wild” segments of the river. These allowances would increase the motorized use potential for the subunit, but would ultimately have little effect based on the natural barriers and vessel limitations needed to access these areas.

Effects from Special Designations

Under Alternative B, Gold Run and Dome Creek would be recommended as suitable for designation as WSRs. Impacts to travel management would be expected to be minimal, in Dome Creek as it would be designated as “recreational.” The BLM could modify existing routes and develop new trails within the river corridor as needed. Gold Run Creek could be added to the NWSR as a “wild” river where no construction of new roads, trails or other provisions for overland motorized travel would be permitted within the river corridor.

Approximately 690,000 acres would be designated as the Fortymile ACEC (Map 60) to protect caribou and Dall sheep habitat. Management of this area could effect travel and transportation management if additional restrictions (i.e., seasonal, weight) were placed on OHV use and the construction of additional trails. However, impacts to travel are expected to be negligible, as the areas within the ACEC are remote and difficult to access.

4.4.2.3.4. Alternative C

Effects from Forest and Woodland Products

Slightly more lands would be available for forest harvest activities compared to Alternative B, including allowing personal use of timber and commercial forest product harvest in the “scenic” and “recreational” segments of the Fortymile WSR. Opening these relatively accessible areas to harvest, could potentially result in a higher likelihood of activity and resulting impacts.

Effects from Recreation

Similar to Alternative B, the BLM would continue to manage public lands for a variety of recreational activities within all RSC settings. Effects on travel and transportation management would be similar to those identified under Alternative B. Under this alternative, the RSC setting establishes fifty-eight percent of the Fortymile SRMA as available to non-motorized recreation opportunities and the winter-use of snowmobiles (1,000 pounds curb weight and less) (144,000 acres Semi-Primitive). The remaining forty-two percent (82,000 acres Backcountry, 11,500 acres Middlecountry, 10,200 acres Frontcountry, and 840 acres Rural) would remain limited (i.e., 1,500 pounds curb weight and less, existing routes except for game retrieval) to summer-motorized experiences and developed recreation activities. Thus, when compared to Alternative B, fewer opportunities would exist for recreational users seeking primitive, non-motorized experiences, while more opportunities would be available for recreational activities that involve the use of motorized travel.

Effects from Travel Management

Effects would be similar to those identified under Alternative B, except more area would be made available for travel activities that involve the summer-use of OHVs. This alternative would Limit OHV use to existing routes and vehicle weight (1,500 pounds curb weight and less), except for game removal, on 1,732,000 acres (ninety-two percent) during non-winter months, and maintain the weight restriction within one-hundred percent of Subunit (1,876,000 acres) during the winter months. Approximately 144,000 acres of Semi-Primitive lands would be limited no summer motorized travel. This would provide a direct benefit to recreational hunters who could retrieve legally harvested big-game animals off of pre-existing routes. As a result, impacts on travel management would be slightly less for this alternative, when compared to Alternative B.

Effects from Special Designations

Approximately 554,000 acres would be designated as the Fortymile ACEC (Map 61) to protect caribou and Dall sheep habitat. Effects would be the similar as those discussed under Alternative B, except the ACEC would be smaller, and parts of the ACEC would be open to mineral exploration and development. If mining activity occurred, additional travel routes could be established and added to the trail network.

4.4.2.3.5. Alternative D

Effects from Forest and Woodland Products

Under Alternative D, personal use of timber and commercial use of forest products would be allowed throughout the subunit, except within the Eagle Recreational Withdrawal and the Fort Egbert Historic Site. Effects would be similar to Alternative C, even though slightly more lands would be open to personal use of timber, including the “wild” segments of the Fortymile River. The additional lands are not particularly accessible and use levels would likely not increase compared to Alternative C.

Effects from Recreation

Similar to Alternative C, the BLM would continue to manage public lands for a variety of recreational activities within all RSC settings. Effects on travel and transportation management would be similar to those identified under Alternative B. Under this alternative, the RSC setting establishes twenty-two percent of the Fortymile SRMA as available to non-motorized recreation opportunities and the winter-use of snowmobiles (1,000 pounds curb weight and less) (54,000 acres Semi-Primitive). The remaining seventy-eight percent (96,000 acres Backcountry, 77,000 acres Middlecountry, 14,900 acres Frontcountry, and 7,640 acres Rural) would remain limited (i.e., 1,500 pounds curb weight and less, cross-country travel) to summer-motorized experiences and developed recreation activities. Thus, while this alternative would offer the least opportunities for recreational users seeking primitive, non-motorized experiences, more opportunities would exist for recreational activities that involve the use of motorized travel, when compared to Alternatives B and C.

Effects from Travel Management

Under this alternative, all BLM-managed lands in the Fortymile Subunit would be designated as limited for OHV use. This would restrict OHV use to vehicle weights of 1,500 pounds curb weight and less on 1,820,000 acres (ninety-seven percent) during non-winter months, and maintain the weight restriction within one-hundred percent of Subunit (1,876,000 acres) during the winter months. This represents a departure from Alternatives B and C, as limited (i.e., 1,500 pounds curb weight) cross-country travel would be allowed on all BLM-managed lands outside the SRMA and within Backcountry, Middlecountry, Frontcountry, and Rural Zones within the SRMA under this alternative. Approximately 54,000 acres of Semi-Primitive designated lands would be limited to no summer motorized use. Thus, while a greater portion of the subunit becomes available to motorized users under this alternative, less area becomes available for users seeking a primitive, non-motorized type of experience.

Effects from Special Designations

Approximately 554,000 acres would be designated as the Fortymile ACEC (Map 62) to protect caribou and Dall sheep habitat. Effects would be the similar as those discussed under Alternatives C and D, except the entire ACEC would be open to mineral exportation and development. If exploration occurred, additional travel routes could be established and added to the travel network.

4.4.2.3.6. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs of all alternatives. This alternative allows for a modification of current use limits from Alternative A including weight, width and seasonal restrictions but continues to allow for motorized transportation throughout the subunit.

Effects from Forest and Woodland Products

Similar to Alternative D, personal use of timber and commercial use of forest products would be allowed throughout the subunit, except within the Eagle Recreational Withdrawal and the Fort Egbert Historic Site. Effects would be similar to Alternative C, even though slightly more lands would be open to personal use of timber, including the “wild” segments of the Fortymile River. The additional lands are not particularly accessible and use levels would not increase compared to Alternative C.

Effects from Recreation

In Alternative E, 248,000 acres are designated as an SRMA with five Recreation Management Zones (RMZs) representing a full spectrum of user experiences. BLM-managed lands not designated as an SRMA encompasses 1,628,000 acres.

In this alternative, 144,000 acres will be managed as Semi-Primitive with an emphasis on non-motorized recreation. These Recreation Management Zones include the “wild” segments of the WSR. Management for Backcountry and Middlecountry with an emphasis on a mix of motorized and non-motorized uses include 93,000 acres, while Frontcountry and Rural with an emphasis on build facilities and motorized trail access encompasses 11,000 acres.

Effects from management emphasis in the RMZ will include specific management objectives to provide for a variety of recreational activities. Under this alternative, 58 percent of the SRMA would be managed with an emphasis on non-motorized recreational activities and the winter use of snowmobiles. The remaining 42 percent of the SRMA would be managed for more motorized recreational access. This management spectrum would allow for more non-motorized recreational activities and infrastructure to be developed in more remote areas but would not limit the access by summer motorized access. Limitations in trailhead size or staging areas may pose a limiting factor for motorized access. The creation of walking and or hiking trails in the Semi-Primitive RMZs will provide a benefit for users seeking a more primitive recreational experience. Conversely, the remaining portions of the SRMA will have a management emphasis that will allow for larger trailheads and multiple use type transportation corridors. User conflicts for this subunit are expected to be low due to the low concentration of users and high use of motorized recreation in these portions of the subunit.

Effects from Travel Management

Under Alternative E, 100 percent of the Fortymile Subunit would be designated as Limited by weight to 1,500 pounds curb weight or less for OHV use. Winter motorized use of snowmobiles

would be allowed on 100 percent of the subunit; cross-country use summer motorized use of OHVs would be allowed outside of the SRMA, Mosquito Flats ACEC and the Fortymile ACEC. The use of hovercraft, airboats and personal watercraft would be allowed on all portions of the Fortymile WSR.

Effects of this alternative are similar to Alternative A with the exception of a more restrictive weight and width restriction in the lands outside of the SRMA and an increase in weight limitations within the SRMA to accommodate UTVs. Adjacent lands are managed with a 1,500 pound curb weight which should have a positive effect on users and compliance with weight and width restrictions and reduce user conflict. The existing topography makes pioneering new trails difficult in most portions of the SRMA. The existing trails are hardened and widely used. The allowance of a slightly larger OHV will have little impact on the existing trail width or conditions.

Alternative E allows for all forms of motorboats including jetboats, hovercraft and airboats on the Fortymile WSR. This differs from Alternative A by allowing this use on wild segments of the WSR, these include the Upper North Fork, Champion Creek, Joseph Creek, Middle Fork, Lower Fork and the Mosquito Fork sections. It is not anticipated that more than two water craft a year utilized the sections above the “Kink”, a natural rock barrier which limits access. Use above Ingle Creek on the Mosquito Fork by motorized use is more likely to occur than the Middle Fork. Use would still be expected to be relatively low, eight motorized boat user days during high water periods. The nature of the river is fairly shallow with larger diameter substrate in the river. This would severely limit motorized travel to high water events. Hovercraft could more efficiently travel this section of river and thought hovercraft use within the Fortymile WSR exists, it is primarily utilized by mining operators and not subsistence users. It is anticipated that fifteen motorized boat user days may be expected annually on this section.

There are no changes from Alternative A regarding snowmobile travel. The effects will be the same as Alternative A.

Effects from Special Designations

Under this alternative, 362,000 acres would be designated as the Fortymile ACEC to protect caribou and Dall sheep habitat. The Mosquito Flats ACEC would encompass 37,000 acres to protect wetland habitat.

The management prescriptions for the Mosquito Flats ACEC include no summer OHV travel. This restriction will limit motorized access to the area, but also serve to positively benefit the management of the wetlands. The area is difficult to traverse in an OHV due to wet conditions and while the limitation will defer immediate motorized access to the wetland area, the remaining user-created routes surrounding the ACEC will be available. There is likely to be up to ten miles of new routes pioneered around the ACEC to accommodate new access points for non-motorize hunting access.

The management prescriptions for the Fortymile ACEC include no cross-country OHV travel without a permit. This limitation may impact user access. The permitting process will help mitigate travel within the area to manage for the caribou herd. Existing travel routes along upland and ridge lines in the area would likely be used due the topography of the area and minimal residual effects of use on those trails is anticipated.

4.4.2.3.7. Cumulative Impacts

As is the case in much of Alaska, the majority of existing routes in the Fortymile Subunit are the result of user-created trails that follow historic non-recreational routes (such as, mining or administrative access) or were created by OHV users repeatedly driving cross-country. Accordingly, many of the existing routes are not sustainable from a resource management perspective, and can cause significant resource damage including, but not limited to, soil compaction, vegetation deterioration, or poor water quality. If not addressed, these impacts will continue to have an effect on travel and transportation management for years to come.

With increased pressures from growing populations and advances in recreational vehicle technology, the Fortymile Subunit is anticipated to experience similar growth in travel-related land use and activity participation. Since OHV use accounts for the majority of travel-related activities in the Fortymile Subunit, it is perceived that the demand for this activity will be of greatest concern during the life of the plan. Given its current rate of user increase (approximately ten percent per year), motorized-travel in the Fortymile Subunit could potentially double within the next 10 years. As this occurs, the need for additional trails and mechanisms for managing these trails will become necessary.

Lands adjacent to BLM lands in the Fortymile Subunit are managed by federal (NPS), state, Native, and private entities. As a result, the rules and regulations governing the use of OHVs may differ slightly, when compared to BLM lands in the region. For instance, while the State of Alaska generally restricts OHVs to 1,500 pounds curb weight and allows cross-country travel in most areas as long as use does not cause or contribute to resource degradation. BLM will change its weight definitions from GVWR to curb weight to more closely align with state definitions, but open cross-country travel will only be allowed in one alternative. This may lead to some confusion, if riders are unaware that they have crossed the boundary of a different management agency or entity. Consequently, a proliferation of user-created trails could occur along the boundaries of BLM lands. This effect could be higher in the Fortymile Subunit, as BLM lands are more interspersed with state and private lands than in the other subunits.

4.4.3. Special Designations

4.4.3.1. Wild and Scenic Rivers Fortymile Subunit

Summary of Effects

Under all alternatives, the Fortymile WSR will continue to be managed to protect the free-flowing characteristics of the river, water quality, and Outstandingly Remarkable Values (ORVs). ORVs for the Fortymile River System are scenic, recreation, geologic, wildlife populations and habitat, and historic.

Management actions that protect the naturalness of the landscape such as wilderness characteristics, protection of fish and wildlife habitats, protection of vegetation and recreation management that manages for more primitive experiences will help protect many of the ORVs of the river system.

Alternative B is the only alternative where river segments are recommended for inclusion to the NWSR. Dome Creek and Gold Run are recommended with outstandingly remarkable historic values.

4.4.3.1.1. Alternative A (No Action)

No additional river segments are identified as suitable for inclusion to the NWSR. Under this alternative, the BLM would not recommend that Congress designate any river segments. The Fortymile WSR would continue to be managed to protect water quality, free-flowing characteristics and important river values.

4.4.3.1.2. Alternative B

In general, this alternative anticipates a lower level of resource development and is the only alternative where river segments are determined to be suitable for inclusion to the NWSR. Under this alternative, the BLM would recommend that Congress designate each suitable river segment. This recommendation would influence the Congressional decision and increase the likelihood of permanent legislative protection. Decisions are evaluated for effect on identified Outstandingly Remarkable Values, free-flowing character and water quality.

Through the Wild and Scenic Rivers Inventory (Appendix E, *Wild and Scenic Rivers Inventory*) the BLM has determined which rivers and streams are suitable for inclusion in the NWSR. Two segments in the Fortymile Subunit were determined to be suitable: Dome Creek as “recreational” with outstandingly remarkable historic values; and Gold Run as “wild” with outstandingly remarkable historic values. All segments determined to be suitable must be managed for the protection of their Outstandingly Remarkable Values and free-flowing nature until such time as Congress acts upon the determination finding and either designates the river segment or removes it from consideration. If the segment is removed from consideration by Congress, the BLM would manage the segment according to the management provisions of the RMP. The determination of suitability is a policy determination.

Effects from Cultural and Paleontological Resources

The protection of cultural resources would have a direct impact to outstandingly remarkable historic values. Destructive cultural resource data recovery and scientific use has the potential to directly impact outstandingly remarkable historical values. The removal of paleontological resources has the potential to directly and indirectly impact outstandingly remarkable historic values if the paleontological values are in close proximity to these historic values. Surface disturbance activities have the potential to directly and indirectly impact water quality.

Effects from Fish and Aquatic Species

Active rehabilitation efforts, such as willow plantings, seeding and fertilizing, recontouring the floodplain and returning the stream channel to a more natural functioning condition to areas with surface disturbance would have positive direct and indirect impacts to water quality on Dome Creek.

Effects from Soil, Vegetation, and Water Resources

Returning lands to pre-disturbance conditions would enhance water quality. Management of soil resources, vegetative communities, and watersheds for a properly functioning condition within riparian zones, uplands, wetlands and aquatic areas would directly and indirectly enhance water quality.

Effects from Visual Resources

“Wild” river segments would be managed as VRM Class I with the objective to preserve the existing character of the landscape and provide for natural ecological changes. Very limited management activities may occur where the level of change to the characteristic landscape is very low and must not attract attention. “Recreational” river segments would be managed as VRM Class III with the objective to partially retain the existing character of the landscape with moderate changes that repeat the basic elements found in the predominant natural features of the characteristic landscape. Management activities may attract attention, but should not dominate the view of the casual observer.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristic would indirectly protect the free-flowing characteristics and water quality of the Gold Run segment.

Effects from Wildland Fire

Wildland fires have the potential to destroy or harm the outstandingly remarkable historic values.

Effects from Wildlife

Management of a naturally functioning ecosystem would directly and indirectly protect water quality. Restoration of riparian and wetland areas would directly and indirectly enhance water quality.

Effects from Lands and Realty

Consolidation of land ownership could indirectly enhance water quality by acquisition of lands adjacent to the river segments. Land use authorizations, such as leases and rights-of-way could indirectly and directly impact outstandingly remarkable historic values, directly impact free-flowing characteristics, and indirectly impact water quality if authorized across or along the river segments. Closing approximately 1,012,000 acres to locatable minerals would directly and indirectly protect water quality, free-flowing characteristics, historic values and naturalness or the river segments.

Effects from Locatable Minerals

The impacts from valid existing rights for the extraction of locatable minerals could directly impact outstandingly remarkable historic values and directly and indirectly impact water quality on Dome Creek. Modern mining methods could destroy the historic values. Depending on the methods used and size of operation, mining activities could impact the free-flowing characteristics of the river. Suction dredge operations would impact the water flow and change, at least temporarily, the river bed characteristics. These changes could alter the natural flow of the river segments.

Effects from Recreation

Gold Run is located within the Semi-Primitive North Fork Fortymile RMZ. Minimal facilities development would occur within this zone. Recreation users may visit historic sites in small groups and may impact outstandingly remarkable historic values. Facilities may indirectly impact water quality.

Dome Creek is located within the Backcountry Fortymile RMZ. Some facilities may occur within this zone and visitors may come in groups that average up to seven people. These slightly larger

groups may visit historic sites and may impact outstandingly remarkable historic values. Facilities may indirectly impact water quality.

Effects from Travel Management

Unrestricted non-motorized travel could directly impact outstandingly remarkable historic values and water quality with the development of social travel routes. Unrestricted aircraft landings could indirectly impact water quality and Outstandingly Remarkable Values by allowing motorized access to historic sites.

Unrestricted winter motorized overland travel by OHVs weighing 1,500 pounds curb weight and less could indirectly impact water quality through the development of social routes and outstandingly remarkable historic values by allowing motorized access to historic sites. In Dome Creek, restricting summer motorized use by weight and to existing routes could indirectly impact water quality and Outstandingly Remarkable Values by allowing motorized access to historic sites. No summer motorized use is allowed in Gold Run.

Motorized travel could directly and indirectly impact water quality and Outstandingly Remarkable Values by allowing motorized access to remote areas.

Effects from Special Designations

Gold Run and Dome Creek would be recommended suitable for designation as WSRs. The designation of these rivers by Congress would provide for greater protection of overall river values and of outstanding remarkable river values specifically. The amount of protection is dependent on the classification of the river segment. Management of suitable rivers would be coordinated with the State of Alaska. Dome Creek is 4.7 miles long and has a 1,254-acre corridor. Gold Run is 4.1 miles long and has a 1,326-acre corridor.

Effects from Hazardous Materials

Environmental remediation activities, such as the removal of surface or buried wastes from abandoned sites and removal of contaminated soils, could directly and indirectly enhance water quality and outstandingly remarkable historic values depending on the location of these activities.

Effects from Subsistence

Harvest of subsistence resources such as timber and other forest products could directly and indirectly impact the outstandingly remarkable historic values if collection of these resources occurs at historic sites.

4.4.3.1.3. Alternative C

Same as Alternative A, except designation and management of the Fortymile ACEC would protect Gold Run Creek from impacts due to mining.

4.4.3.1.4. Alternative D

Same as Alternative A.

4.4.3.1.5. Alternative E (Proposed RMP)

Same as Alternative C.

4.4.3.1.6. Cumulative Impacts

Past, present and reasonably foreseeable actions that are relevant to Wild and Scenic Rivers management include mining, oil and gas development, increases in motorized use on both water and adjacent lands, utility and transportation rights-of-way, recreation use, travel management, and use restrictions to protect wildlife, fisheries and vegetative resources.

Cumulative effects will accrue from the BLM management decisions in addition to activities on surrounding lands during and beyond the life of the plan. Most of the surrounding land base is either Native corporation or state and could be subject to resource development activities which may have a direct impact on water quality and other river related values. Development of lands along waterways could have an indirect impact on other rivers by increasing the importance of river related values of free-flowing, water quality, scenic, recreation, geologic, fish and wildlife habitats and populations, cultural and historic on those other rivers.

Designation and management of ACECs, and maintenance of wilderness characteristics, as well as measures to protect other resource values on adjacent federal lands, would help protect suitable rivers. Proposed and current management in these areas would limit development and help maintain a more natural ecosystem with benefits to water quality and other river related values.

Protection of river related values along the Fortymile WSR and the Charley River WSR (managed by the National Park Service), would continue. Protection of river related values along eligible rivers in the region, the Yukon and Seventymile, both managed by the National Park Service, would continue until a decision is made by Congress to not add them to the NWSR. Protection of river related values along proposed additions, Dome Creek and Gold Run, would also continue if designated by Congress. The BLM and other agencies could implement other means to protect river values if these segments are not included in the system.

4.4.4. Social and Economic Conditions

4.4.4.1. Economics Fortymile Subunit

Summary of Effects

The largest economic effect in the Fortymile Subunit would be from mining. The proposed opening of new areas to mineral entry would result in the staking of new mining claims and additional suction dredging, small-scale placer, and large-scale placer mine operations in the Fortymile Subunit. Employment associated with mining activity on BLM-managed lands in the subunit is estimated at 1.4 percent of the current statewide mineral industry employment. Additional industry employment is less than two percent for any alternative. The effects would be the least under Alternative A and the greatest under Alternative D. New placer mining could increase the estimated employment in placer mining in the state by as much as twenty percent under Alternative D.

Table 4.12. Employment and Income Under Action Alternatives^a

Subunit	Alternative B			Alternative C			Alternative D			Alternative E		
Direct Effect	New Operations	New Jobs	New Income (\$1,000)	New Operations	New Jobs	New Income (\$1,000)	New Operations	New Jobs	New Income (\$1,000)	New Operations	New Jobs	New Income (\$1,000)
Fortymile	9	33	\$1,193	15	49	\$1,766	26	85	\$3,068	9	33	\$1,193
Steese	1	4	\$146	18	66	\$2,386	30	108	\$3,910	1	4	\$146
White Mountain	0	0	0	0	0	0	0	84	3,034	0	0	0
Black River	0	0	0	0	0	0	0	0	0	0	0	0
Total Indirect Effect		37	\$1,205		115	\$3,737		193	\$9,011		37	\$1,205

^aSources: Szumigala 2011, BLM 2014a, Stebbins 2009, McDowell 2006

4.4.4.1.1. Effects Common to All Alternatives

In addition to the effects discussed as common to all subunits in section 4.3.3.1, the following effects would occur in the Fortymile Subunit.

No revenues to the State of Alaska or the federal government would result from coal or oil and gas exploration. Similarly, no revenues would result from locatable mineral exploration and mining. Seismic exploration for oil and gas is unlikely on these low potential lands during the life of the plan. No economic effect would be anticipated under any alternative.

Effects from Locatable Minerals

Mining activity is predicted to result in large and small-scale placer and suction dredge operations in the Fortymile Subunit. This forecast is based on a study for the planning area that the BLM contracted with a mine cost engineering corporation (Stebbins 2009). The BLM chose to examine effects of large and small-scale placer, and suction dredge mining because decisions in this RMP propose to open some lands to new mining claims.

No mining claims would be filed, nor would mining activity occur until the ANCSA 17(d)(1) withdrawals are modified. The BLM anticipates this would take at least five years after approval of this RMP. In all cases, mines are assumed to operate for 10 to 20 years. No revenue to the federal government is expected.

Economists regard three categories of employment and income in considering the multiplier effect of an activity such as mining. Direct employment and income includes only employees of mining companies. Indirect employment and income includes employees of businesses providing goods and services to mining companies. These may include air taxi services and equipment. Finally, induced employment and income is considered when jobs are created as a result spending of direct and indirect income attributable to mining activity. An example of this is an additional retail store employee or schoolteacher.

Employment and income multipliers vary between projects and locations. McDowell (2006) shows widely varying multipliers for existing Alaska mines, but averages them at 2.0 for jobs and 1.9 for indirect payroll. Project activity has a lower effect on small communities than on the state. This is due to procurement from central sources in larger communities. For example, pumps are not available at retail in Eagle. These would likely be procured from Anchorage. Similarly, the multiplier effect will decrease in Alaska and a locality, when nonresident employment is significant. The State of Alaska estimated that 32.7 percent of metal mining workers were non-residents in 2012 (Krieger, 2014). The analysis in this RMP uses McDowell employment and income multipliers for the Alaska mining industry.

All employment and income shown in this analysis are *estimated* using input and assumptions from the BLM (Stebbins 2009, BLM 2009c) and McDowell reports (2006, 2009, and 2014). For example, it is likely that employment estimates are slightly higher than may be verified from actual payrolls.

Economic base models stress exogenous (external) inputs. Income is generated by basic economic activity, whether it is mineral production for export to distant markets or tourism catering to outside visitors, and is seen as the driver of the local economy and, specifically, the local support and service industries that compose the non-basic sectors. Economic base models hypothesize a constant ratio between basic and non-basic activity. As a result, changes in basic sector activity

can be directly linked to changes in non-basic activity through a static impact multiplier. For every dollar of income earned in the basic sectors, economic base models assume additional dollars are earned in the non-basic sectors. The multiplier can then be used to predict changes in total community economic activity based on predicted changes in basic activity.

Economic base hypotheses are not valid in the towns of southeast Alaska, and, by extension, small, isolated communities elsewhere. First, an extremely high degree of income leakage in small communities means that impacts from changes in employment and income may appear outside the community in question. The effect of leakage, though theoretically consistent with the economic base hypothesis, may not be adequately accounted for in input/output modeling. Second, the economic base model inputs, notably labor, may be in error. This would help explain instances where changes in basic employment actually result in opposite changes in employment in other sectors of the local economy, as individuals move from job to job within a community (Robertson 2003). In summary, economic inputs multiplied best register effects on a regional and Statewide level.

4.4.4.1.2. Alternative A (No Action)

Effects would be limited to increase in currently allowed economic activities resulting from population growth.

Effects from Locatable Minerals

Alternative A would not allow new claims, as BLM lands are currently withdrawn from mineral entry by ANCSA 17(d)(1). There are, however, existing mining operations on 10,000 acres of valid, existing federal mining claims in the Fortymile Subunit. The following discussion for Alternative A is based on activities likely to occur on these existing claims. Mining activity is predicted to result in large and small-scale placer, and suction dredge operations in the subunit.

Suction dredge mining results in the least economic effect of any mining method. Portable and inexpensive equipment is used. The model developed for suction dredge mining in all locations involves a crew of two working 10 hours per day, seven days per week, 120 days per year. Based on six suction dredging operations, current employment is 12 workers.

Small-scale placer mining uses a bulldozer, and excavator and a mobile wash plant to excavate and process gold-bearing gravel. In this model, a two-man crew works 12 hours per day, seven days per week, for a 130-day season. The camp includes one support person and a cook for a total of four workers. Based on 27 small-scale placer mining operations, current employment is 108 workers.

Large-scale placer operations utilize larger excavation equipment than the small-scale placer mines. In this model, two 2-man crews each work a 10-hour shift, seven days per week, during a 130 day season. There are five additional employees, including a supervisor, skilled workers, and laborers for a total of nine workers. Based on two large-scale placer mining operations, the resulting employment is 18 workers.

Total current mining employment on BLM-managed lands in the Fortymile Subunit is estimated at 138 workers. However, these are part-year employees. Data prepared by the State of Alaska uses full-time equivalents. The full-time equivalent in the Fortymile Subunit is approximately 46 workers, based on the Stebbins (2009) models.

Total employment by the Alaska minerals industry in 2012 was 4,366 full time equivalent jobs (Athey 2013). This indicates about 1.4 percent of the industry employment on BLM-managed lands occurred at Fortymile operations. The DGGS reported the average monthly wage for mining in Alaska during 2012 at \$8,422 (ADLWD 2013). Fortymile operations accounted for \$387,412 in monthly wages, annualized.

4.4.4.1.3. Alternative B

Effects from Locatable Minerals

Under Alternative B, 800,000 acres would be opened to locatable mineral entry in the Fortymile Subunit and new mining claims could be staked.

There would be 10 total suction dredging operations, an increase of four from Alternative A, the resulting employment would be eight additional workers. Small-scale placer mining would increase by four to a total of 31 operations. New employment would be 16 workers. One additional large-scale placer operation would open, for a total of three in the subunit. The resulting new employment would be nine workers.

Total new mining employment associated with BLM-managed lands in the Fortymile Subunit under Alternative B would be estimated at 33 part-year workers. The full-time equivalent would be approximately 11 additional workers, based on the Stebbins (2009) models. The DGGS reported the monthly wage for mining in Alaska during 2012 at \$8,422 (ADLWD 2013). New Fortymile operations would account for \$92,642 in monthly wages, annualized.

Indirect and induced employment and income would also result from new mining. These would be higher than under Alternative A. Refer to Table 4.12, "Employment and Income Under Action Alternatives" for Fortymile data and a comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative.

4.4.4.1.4. Alternative C

Effects from Locatable Minerals

Under Alternative C, 1,253,000 acres would be opened to locatable mineral entry and the staking of mining claims.

There would be an estimated 14 suction dredging operations, an increase of eight from Alternative A. The resulting employment would be 16 additional workers. Small-scale placer mining would increase by six to a total of 33 operations. New employment would be 24 part-year workers. The number large-scale placer mines would be three, the same as Alternative B. The resulting new employment would be nine workers.

Total new mining employment in the Fortymile Subunit under Alternative C would be estimated at 49 part-year workers. The full time equivalent would be approximately 16 additional workers, based on the Stebbins (2009) models. The DGGS reported the average monthly wage for mining in Alaska during 2012 at \$8,422 (ADLWD 2013). New Fortymile operations would account for \$134,752 in monthly wages, annualized.

Indirect and induced employment and income would also result from new mining. These outputs would be higher for Alternative C than Alternative B. See Table 4.12, “Employment and Income Under Action Alternatives” for Fortymile data and comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative and higher than under Alternative B.

4.4.4.1.5. Alternative D

Effects from Locatable Minerals

Under Alternative D 1,713,000 acres in the Fortymile Subunit would be opened to locatable mineral entry and staking of new mining claims.

There would be 18 total suction dredging operations, an increase of 12 from Alternative A. Resulting employment would be 24 additional workers. Small-scale placer mining operations would increase by seven to a total of 34. New employment associated with small-scale placer mines would be 28 workers. The number of large-scale placer mining operations (three) would be the same as Alternative B. The resulting new employment associated with large-scale placer mines would be nine workers.

Total new mining employment in the Fortymile Subunit under Alternative D would be estimated at 61 part-year workers. The full-time equivalent would be approximately 20 workers, based on the Stebbins (2009) models. The DGGs monthly wage for mining in Alaska during 2012 at \$8,422. New Fortymile operations would account for \$168,440 in monthly wages, annualized.

Indirect and induced employment and income would also result from new mining. These outputs would be higher for Alternative D than Alternative B, C, or E. See Table 4.12, “Employment and Income Under Action Alternatives” for Fortymile data and comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative and higher than under Alternatives B, C, or E.

4.4.4.1.6. Alternative E (Proposed RMP)

Under Alternative E 1,132,000 acres in the Fortymile Subunit would be opened to locatable mineral entry and staking of new mining claims.

There would be 18 total suction dredging operations, an increase of 12 from Alternative A. Resulting employment would be 24 additional workers. Small-scale placer mining operations would increase by seven to a total of 34. New employment associated with small-scale placer mines would be 28 workers. The number of large-scale placer mining operations (three) would be the same as Alternative B. The resulting new employment associated with large-scale placer mines would be nine workers.

Total new mining employment in the Fortymile Subunit under Alternative E would be estimated at 61 part-year workers. The full-time equivalent would be approximately 20 workers, based on the Stebbins (2009) models. The DGGs monthly wage for mining in Alaska during 2012 at \$8,422. New Fortymile operations would account for \$92,642 in monthly wages, annualized.

Indirect and induced employment and income would also result from new mining. These outputs would be higher for Alternative D than Alternative B or C. See Table 4.12, "Employment and Income Under Action Alternatives" for Fortymile data and comparison of all subunits and alternatives.

4.4.4.2. Environmental Justice Fortymile Subunit

Summary of Effects

Effects to the environmental justice population in the Fortymile Subunit are expected to be low. Increased employment opportunity caused by recreation use or mining activity could benefit environmental justice populations. This includes the communities of Chicken, Eagle, and Eagle Village.

4.4.4.2.1. Effects Common to All Alternatives

There will be little or no economic effect resulting from the following resources, resource uses, or programs: Forest and Woodland Products, Lands and Realty, Leasable Minerals, and Renewable Energy.

Effects from Locatable Minerals

Mining of locatable minerals could result in additional jobs and income to local residents in the environmental justice population. These effects would be very low and apply only to alternatives B, C, D, and E. See Table 4.12, "Employment and Income Under Action Alternatives" for total direct employment and income for all alternatives.

4.4.4.2.2. Alternative A (No Action)

There would be no effects.

4.4.4.2.3. Alternative B

There would be no effects other than those from locatable minerals discussed under Effects Common to All Alternatives.

4.4.4.2.4. Alternative C

Same as B

4.4.4.2.5. Alternative D

Same as B except the number of Special Recreation Permits would be slightly higher under Alternative D. Environmental justice effects to communities in the area may be positive if employment in guiding or associated activities accrues to local populations.

4.4.4.2.6. Alternative E (Proposed RMP)

There would be no effects other than those from locatable minerals discussed under Effects Common to All Alternatives.

4.4.4.3. Social Conditions Fortymile Subunit

Summary of Effects

Most impacts to individuals and groups are minor to moderate in part because other opportunities exist for the activities within the planning area and on nearby State of Alaska or Native corporation lands. While it is possible for impacts for multiple resources to adversely affect individuals and groups in a cascading fashion, most communities exhibit sufficient resiliency to adapt to change.

The following programs would have minor net positive or negative effect to social conditions and are not analyzed further: Air, Cave and Karst Resources, Cultural and Paleontological Resources, Fish and Aquatic Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness, Wildland Fire Ecology and Management, Wildlife, Fluid and Solid Leasable Minerals, Salable Minerals, Recreation, Travel Management, and Special Designations. For further discussion, see Effects Common To All Alternatives in all Subunits.

4.4.4.3.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Residents in the town of Eagle live close to BLM lands, which could be a convenient source of firewood. This land is part of the Fort Egbert Historic Site and BLM's campground, so is unavailable for firewood collection. This protects the natural and historic nature of the land.

Effects from Land and Realty; Locatable Minerals

The community of Chicken centers on mining, so limitations on mineral entry will result in increased pressure to mine State of Alaska lands or reduce community viability. At present, community character and values are determined by the link to mining and winter closure of the town. Extensive withdrawals have limited this activity within the planning area. To the extent that withdrawals exist, mining would cease to be an aspect public land use in the area. No remnant activities would occur on public land to give context to the various displays of the mining era. Reduced opportunities for participation at a lifestyle or recreational level would reduce individual well-being, and community well-being in Chicken.

Effects from Subsistence

Preventing or reducing placer mining may improve subsistence catches of some fish species. This will increase the sense of well-being among populations targeting such species, and will increase food security if other food sources are displaced by wildland fire, climate change, or other factors.

4.4.4.3.2. Alternative A (No Action)

Effects from Land and Realty; Locatable Minerals

The Eagle Recreation Site withdrawal is adjacent to Fort Egbert and nearby historic structures, so retention of the withdrawal helps maintain the character of the site and community. This contributes to the community both in support of efforts to develop tourism opportunities and maintaining the historic landscape that is part of the sense of place many local inhabitants experience.

Effects of maintaining ANCSA 17(d)(1) withdrawals may be decreased mining activity, eroding the community character and well-being of communities in the subunit, such as Chicken. The extent of activity will be determined by the mineral potential of the available lands.

4.4.4.3.3. Alternative B

Effects from Land and Realty; Locatable Minerals

As in Alternative A, maintaining the Eagle Recreation Site withdrawal contributes to community economic activities and sense of place.

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of communities in the subunit, such as Chicken. Since nearly half of the acreage in the subunit will be available to mining, those that value resource protection, some recreationists, and perhaps other groups may experience some decline in quality of life either directly in their activities, or indirectly.

4.4.4.3.4. Alternative C

Effects from Land and Realty; Locatable Minerals

As in Alternative A, maintaining the Eagle Recreation Site withdrawal contributes to community economic activities and sense of place.

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of communities in the subunit, such as Chicken. Since 70 percent of the acreage in the subunit will be available to mining, those that value resource protection, some recreationists, and perhaps other groups may experience a more significant decline in quality of life either directly in their activities, or indirectly.

4.4.4.3.5. Alternative D

Effects from Land and Realty; Locatable Minerals

Disposal of Eagle Recreation Site withdrawal may change the character of the lands adjacent to Fort Egbert and Eagle, which may result in a net decrease in quality of life for some residents by altering their sense of place, and for some visitors by detracting from the historic setting of the fort.

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of communities in the subunit, such as Chicken. The extent of activity will be determined by the mineral potential of the available lands. Increased activity would result in new employment of 85 seasonal workers and over \$3 million in personal income for the employees, providing a significant economic infusion to an area with few employment opportunities. That may result in an increased well-being and

sense of security for those employees and area merchants. The effects may include increased traffic, higher home prices, and other consequences that result in a decreased well-being and quality of life for other members of the community. Since 92 percent of the acreage in the subunit will be available to mining, those that value resource protection, some recreationists, and perhaps other groups may experience a significant decline in quality of life either directly in their activities, or indirectly.

4.4.4.3.6. Alternative E (Proposed RMP)

Effects from Land and Realty; Locatable Minerals

As in Alternative A, maintaining the Eagle Recreation Site withdrawal contributes to community economic activities and sense of place.

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of communities in the subunit, such as Chicken. Since almost half of the acreage in the subunit will be available to mining, those that value resource protection, some recreationists, and perhaps other groups may experience a more significant decline in quality of life either directly in their activities, or indirectly.

4.4.4.4. Subsistence Fortymile Subunit

Summary of Effects

Current uses of BLM lands consist primarily of placer and suction dredge mining, non-motorized recreation, and subsistence activities. All residents of the subunit living outside of the Fairbanks North Star Borough boundaries qualify as rural residents under ANILCA and are eligible to harvest resources under the subsistence program on federal lands. Nine communities are within the subunit: Eagle, Eagle village, Chicken, Northway, Tetlin, Tok, Tanacross, Dot Lake, Healy Lake and Delta Junction and are the primary federally qualified subsistence users of the area. Customary and Traditional use determinations for specific big game species or Game Management Units have been applied in some cases (section 3.5.3).

Impacts from authorized land use activities include user conflicts, displacement of resources, and potential declines in resource availability due to disturbance of critical habitats or during critical times (e.g., calving periods). Alternative D, which allows the most latitude to development and OHV use, would have the greatest potential to negatively affect subsistence resources and uses. Alternative B, which limits land use activities the most, would confer the highest levels of protection to subsistence resources and uses.

Published data used in this section are from the following sources. Caulfield (1979) documented current and historic subsistence use by residents of Eagle and Eagle Village. Halpin (1987) documented subsistence use by residents of Tetlin for the time period 1974–1984. Case (1986) documented use for Northway from 1974–1984. Martin (1983) documented use for Dot Lake from 1946–1982. Marcotte (1991) documented subsistence use by residents in the communities of Dot Lake, Tanacross, Tok, Tetlin and Northway for 1968–1988. Use areas documented in these studies are minimum use areas and reflect in some cases the current use over a 10 year period and in some cases the lifetime use of those interviewed.

Caribou, primarily Fortymile caribou, moose and salmon are the most important subsistence resources in the subunit. Trapping continues to be culturally and economically important to many federally qualified subsistence users in the area.

Most subsistence fishing by rural residents in the Fortymile Subunit occurs on the Tanana or Yukon rivers and in lakes and ponds off BLM-managed lands. Land use activities permitted in the subunit, such as development of transportation corridors and locatable minerals, may affect water quality and fish spawning or rearing areas at downstream locations. This may indirectly impact subsistence fisheries harvested off BLM-managed lands. Stipulations to mitigate impacts to water quality and fish spawning and rearing areas would be attached to land use permits as appropriate. No impacts to subsistence fishery resources or uses in or adjacent to BLM-managed lands would be expected from the alternatives.

Subsistence activities documented to occur by local rural residents on BLM-managed lands include hunting of moose and caribou (Tanacross, Tok, Northway), bear (Tanacross), and small game (Tanacross, Tok), trapping (Tanacross, Tok, Northway) and berry picking (Tanacross, Tok, Northway). These activities occur primarily along the Taylor Highway. In most cases, bear are harvested incidentally to other subsistence activities, such as moose hunting or fishing (Case 1983). Martin (1983) and Halpin (1987) document no subsistence use by Dot Lake or Tetlin on BLM-managed lands in the subunit. Data from joint State-Federal registration permits document contemporary use of BLM-managed lands for harvest of caribou and moose by residents of Chicken, Eagle, Eagle Village, and Delta in addition to Tanacross, Tok and Northway.

4.4.4.4.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Management decisions for commercial timber sales would be similar for the four action alternatives. Demand for commercial timber in the subunit has been lacking and no impacts to subsistence resources or uses would be expected from commercial saw timber or salvage sales under any of the alternatives. Harvest of timber for local biomass projects could occur over the life of the plan particularly after fire or where BLM lands are within an accessible distance from a village. It would be expected that over the life of the RMP villages would move farther from their community to include BLM-managed lands to meet their biomass needs.

Lands open to personal use of timber and commercial products vary by alternative. Demand for personal use and salvage sales has been lacking and would be anticipated to be low over the life of the plan. No impacts to subsistence resources or uses would be anticipated from these resource uses.

Demand for commercial products, particularly mushrooms, can be fairly high after wildland fires. The fire return intervals are such that no significant impacts to subsistence resources or activities are expected from personal or commercial harvest of mushrooms. Salvage activities would be usually linked to wildland fire events. No impacts to subsistence resources or uses would be anticipated from these resource uses.

Effects from Land and Realty Actions

Exchange, disposal or acquisition of lands would have minimal and mostly beneficial impacts to subsistence resources and uses. BLM lands considered for these actions are intermingled with other lands or are small isolated parcels. Consolidation of these would simplify identification of

land status for subsistence and other users and land management would be consistent across a larger area.

The BLM has received few rights-of-way applications in the past and a limited number would be anticipated in the future. Proposed rights-of-way would be analyzed under NEPA and measures to mitigate impacts would be attached to authorizing permits.

The location and amount of withdrawn lands to be revoked would vary by alternative. Revocation of withdrawals, other than ANCSA 17(d)(1) mineral entry and location, will be minimal and impacts would be the same under all alternatives.

Effects from Leasable Minerals

No impacts to subsistence resources or uses are anticipated from oil and gas exploration, drilling, development or related activities under any alternative. Due to low potential for occurrence of economically recoverable oil and gas resources on BLM-managed lands within the subunit, no activity would be expected. Any exploration that would be proposed would require a permit and impacts would be mitigated through permit stipulations and SOPs.

No impacts to subsistence uses or resources would occur from exploration or development of coal or other solid leasable minerals in the Fortymile Subunit under any alternative. No coal development would occur in the subunit because a decision for coal leasing would be deferred under this RMP. An amendment to the RMP would be required before coal leasing could be authorized.

Effects from Salable Minerals

Although the amount of land open to salable minerals varies by alternative, the demand for salable mineral materials would not vary. Few material sales would be anticipated. For all alternatives, it is projected that less than 100 acres of BLM-managed land in the subunit would be authorized for salable minerals. Impacts would be mitigated through permit stipulations. Material sites would continue to be concentrated along the highway and adjacent to areas of end use. Most demand is and would be expected to continue to be met on state lands. There would be minimal impacts to subsistence activities or resources under any alternative.

Effects from Recreation

Recreation use would continue to be concentrated along segments of the Fortymile WSR where canoes, rafts and kayaks can be easily launched and taken off the river from road accessible sites. The demand for Special Recreation Permits (SRP) in the Fortymile Subunit would be expected to remain fairly low. Current only one SRP for guided river trips is active. Effects from these recreational uses would be consistent among the alternatives and would not impact subsistence resources or uses. Although recreation in general could increase in the area, much of it would be guided by travel management prescriptions, which are discussed below.

Hunting under state regulations occurs on BLM-managed lands, but occurs predominantly on state lands due to land status patterns and distribution of wildlife during hunting seasons. State hunting regulations manage hunting on and off federal public lands. Hunting pressure on adjacent lands would impact subsistence use and availability of resources on BLM-managed lands regardless of the BLM recreation management prescriptions.

Some sport fishing occurs within the Fortymile WSR, but would have no impacts on subsistence resources or uses in the area. Similar to hunting, regardless of BLM recreation management, the influence of sport fishing on subsistence uses and resources would be unchanged.

Effects from Travel Management

Interim alternatives for travel management include a range of limits on OHV use including weight limitations, permit requirements, designated routes, and seasonal limitations. Limitations on OHV would benefit subsistence uses, resources and environmental services (e.g., water) by protecting soils and vegetation from ground disturbance, rutting and erosion, and protecting water quality. Limitations on use would reduce direct impacts on resource abundance, distribution and location. Permitting land use actions that include the use of OHV would provide opportunities to develop stipulations to mitigate impacts.

In each alternative a part or all of BLM lands within the Fortymile Subunit would be managed as limited to summer vehicles 1,500 pounds curb weight and less and 64 inch width without a permit or approved Plan of Operations. The size of the affected area would vary based on boundaries of the Semi-Primitive Zones. No summer use of OHV would be allowed in the Semi-Primitive Zones in Alternatives B–D without a permit, such as a 2920 permit. Use of OHV over 1,500 pounds curb weight and greater than 64” would require a permit in all zones. New transportation and utility systems (including airstrips) and relocation of existing roads could be authorized under certain conditions in all alternatives. NEPA analysis and an ANILCA Section 810(a) Evaluation and Finding would be required for each proposed land use to analyze impacts and develop mitigation measures to protect subsistence uses and resources.

Decisions that limit OHV and other motorized uses, such as seasonal restrictions on summer use, would protect areas from use that cannot be sustained due to environmental conditions, such as fragile soils, vegetation, sensitive wildlife habitat, and wetlands. Any use in these areas would result in long-term damage.

Impact from travel management decisions are discussed further under each alternative.

4.4.4.4.2. Alternative A (No Action)

Under the No Action Alternative, present land management practices and levels of resource used would continue in accordance with existing laws, regulations, and policy. Land use activities would continue to be analyzed through the NEPA process and include ANILCA Title VIII Section 810 evaluations. Through these processes, appropriate stipulations would be developed to mitigate any impacts identified.

Effects from Forest and Woodland Products

Subsistence use of forest products are harvested under free-use permits (Nonsale Disposals Act 1878, amended for Alaska 1898 and 1938). Personal use of woodland products (e.g., berries, bark and mushrooms) does not currently require a permit. No impacts to subsistence use of timber, berries and other forest products would be expected from Alternative A.

Effects from Land and Realty

No designated utility corridors or right-of-way avoidance areas are identified in Alternative A. Without designations, a web of rights-of-way could result, impacting habitats upon which

subsistence resources depend. However, few to no applications for rights-of-way are expected over the life of the plan. Long-term camping would continue to be allowed within “scenic” and “recreational” segments of the Fortymile WSR. No significant impacts to subsistence resources or uses are expected from the decisions in this alternative.

Effects from Locatable Minerals

The entire Fortymile Subunit is withdrawn from mineral entry under ANCSA 17(d)(1). Mining is occurring only on valid existing claims that predate the withdrawals. Extraction practices for locatable minerals result in removal of vegetation and overburden impacting wildlife and fish habitat. Activities associated with mining would displace wildlife until suitable vegetative communities are restored, usually within 15 –20 years . Mining operations would be analyzed under NEPA and would include reclamation practices to restore riparian function and reduce potential for erosion and siltation (section 4.3.1.4 Fish and Aquatic Species). Impacts on subsistence resources or uses would be minimal based on this mitigation.

Effects from Travel Management

Within the Fortymile WSR Corridor, OHV use is limited to vehicles 1,500 pounds gross vehicle weight and less without a permit or approved Plan of Operations. Outside the corridor use is limited to vehicles 6,000 pounds gross vehicle weight and less without a permit or approved Plan of Operations. Motorized boats can be used on the WSR river, but only on “wild” segments under provisions of 43 CFR 3809. Travel outside the corridor is not restricted and no OHV designations are in place. Many federal lands in the subunit important to subsistence use are accessible by OHV. Some impacts to wildlife and habitat would occur from cross-country use of OHV during summer. Impacts to subsistence are difficult to mitigate since most cross-country use can occur without authorization.

4.4.4.4.3. Alternative B

Effects from Forest and Woodland Products

Commercial timber sales and salvage sales would be allowed on all lands except within the Fortymile WSR corridor, Eagle Recreational withdrawal, and Fort Egbert Historic Site (249,000). Demand for commercial timber in the subunit has been lacking and no impacts to subsistence resources or uses are expected from commercial timber sales.

Subsistence use of forest products are harvested under free-use permits. Free-use permits would not be issued for personal use of timber within the Fortymile WSR Corridor, the Eagle Recreational withdrawal, and the Fort Egbert Historic Site (249,000 acres). On all other BLM lands, free-use permits for personal use of timber would be considered. Demand for personal use of timber has been lacking in the subunit and would be anticipated to be low over the life of the plan. No impacts to subsistence resources or uses would be anticipated from uses of any forest and woodland products.

Effects from Lands and Realty

No long-term camping would be allowed in the Fortymile WSR Corridor (248,000 acres). Where camping is not allowed, camps associated with state mining claims are often established below mean high water, contributing to additional bank erosion and degradation. Direct impacts to subsistence fishery uses and resources would be expected to be low since little or no subsistence

fishing is documented to occur within the Fortymile or other federal public lands in the subunit. The Fortymile system is not a significant spawning or rearing area for fish populations important to subsistence and little or no impact within the area would be expected. Downstream effects from siltation could result in indirect impacts to spawning and rearing habitat outside BLM lands.

Designating the Fortymile WSR and Fortymile ACEC as right-of-way avoidance areas would protect important wildlife habitat and resources from fragmentation caused by rights-of-way and by reducing disturbance to wildlife. However, since few rights-of-way are anticipated in these remote areas, the effect of the avoidance area would be limited.

Effects from Locatable Minerals

Approximately half of BLM lands would be open to locatable minerals. The mineral potential is low for substantial portions of the open areas. However, some exploration and development would be likely to occur. Extraction practices for locatable minerals would result in removal of vegetation and overburden from large areas impacting wildlife and fish habitat. Activities associated with mining would displace wildlife until suitable habitat would be restored, usually greater than 15–20 years for species important for subsistence. Mining operations would be analyzed under NEPA and authorizations would include reclamation standards required in regulation and policy, SOPs developed in this plan, and mitigation measures and practices to restore riparian function and reduce potential for erosion and siltation, and rehabilitate fish and wildlife habitat. An ANILCA Section 810(a) Evaluation and Finding would be conducted for each permitted action. Impacts to subsistence resources and uses would be greater in Alternative B than for Alternative A as more lands are open to mining.

The Fortymile caribou herd is one of the most important subsistence resources in the area. The general calving range of the herd over the last 16 years would remain mostly closed to mineral location and entry under this alternative. The calving period is the most critical time of the year since pregnant cows are at the lowest ebb of physical condition and largest energy deficit, thus protecting the calving range would be critical. The closure of much of this area would be beneficial to this important subsistence resource.

Effects from Leasable and Salable Minerals

Impacts to leasable and salable minerals are discussed in Effects Common to All Alternatives (section 4.4.4.4.1).

Effects from Travel Management

This alternative would offer the best protection to subsistence resources by limiting summer use of OHV on 1,250,000 acres (undesignated recreation areas, Backcountry, Middlecountry, Frontcountry and Rural Recreation Management Zones, Map 45) to existing routes only and to vehicles 1,500 pounds and less curb weight and 64 inch width and less. All other forms of OHV use within these zones would require a permit or approved plan of operation. Additionally, in the Semi-Primitive Recreation Management Zones (626,000 acres) a permit would be required for all but non-motorized and winter OHV use.

Many trails begin on and lead to BLM lands that are important to subsistence and other users. Impacts to subsistence resources would still occur but would be less than under the other alternatives because limiting use to existing trails reduces disturbance from user-pioneered trails

and protects against disturbance to wildlife, fish and important habitats. Where permits would be required, stipulations would be attached to mitigate impacts to subsistence resources and uses.

Motorized boat use would generally be allowed throughout the subunit, although airboats, hovercraft and personal watercraft would not be permitted on some non-navigable river segments (Table 2.10, “Fortymile Subunit: Summary of Action Alternatives”). Restricting use of airboats, hovercraft and personal watercraft in some areas will benefit subsistence resources by reducing direct and indirect disturbance to resources and important habitats in these remote areas.

4.4.4.4. Alternative C

Effects from Forest and Woodland Products

Subsistence use of forest products would be harvested under free-use permits. Free-use permits would not be issued for personal use of timber within the “wild” segments of the Fortymile WSR, the Eagle Recreational withdrawal, and the Fort Egbert Historic Site (146,000 acres). Demand for free-use permits has been lacking and would be anticipated to be low over the life of the plan. No impacts to subsistence resources or uses would be anticipated from uses of any forest and woodland products.

Effects from commercial timber sales and salvage sales and personal use of timber is discussed in effects common to all.

Effects from Lands and Realty

Alternative C would be the same as Alternative A. Long-term camping associated with state authorized suction dredge mining would be allowed in all but the “wild” segments of the WSR corridor. Most camps associated with suction dredging would be located above ordinary high water. Indirect impacts to subsistence fishery and wildlife resources would be minimal.

No transportation corridors or right-of-way avoidance areas would be designated. Impacts to subsistence resources and uses are expected to be minimal but would be mitigated through stipulations to the authorization. Demand for rights-of-way has been and is expected to be low over the life of the plan.

Effects from Locatable Minerals

Seventy percent of BLM lands would be open to locatable minerals under Alternative C. The mineral potential is low for most of the area with a few interspersed areas of medium development potential (Map 88). Mining operations would be analyzed under NEPA and authorizations would include required reclamation standards, SOPs developed in this plan, and mitigation measures and practices to restore riparian function and reduce potential for erosion and siltation, and rehabilitate fish and wildlife habitat. An ANILCA Section 810(a) Evaluation and Finding would be conducted for each permitted action. Impacts to subsistence resources and uses would be greater in Alternative C than in Alternative B as more lands are open to mining.

Based on the birthing locations of radio-collared cows from 1992–2008, 49% of the Fortymile caribou calving area would be closed to locatable minerals (Table 4.9) in Alternative C. The calving period is the most critical time of the year since pregnant cows are at the lowest ebb of physical condition and largest energy deficit, thus protecting the calving range would be critical. The area of highest calving concentrations documented over the 16 year period would be closed

to locatable minerals. Alternative C would allow mining on some high use portions of the FCH calving area on BLM-managed lands. Impacts could be measurable over the life of the RMP if mining development would become common in the area. Changes in distribution to less favorable habitat, herd condition, and altered calf survival could result.

Effects from Salable Minerals

Impacts on subsistence resources and uses would be the same as Alternative B except that slightly more acreage will be available for material site sales. Mitigation of impacts would be the same as Alternative B (section 4.4.4.4.1 Effects Common to All Alternatives).

Effects from Travel Management

Alternative C differs from Alternative B in the location and size of the RMZs and that off-route travel for game retrieval would be allowed in all areas except the Semi-Primitive RMZ. The result would be that off-route travel for game retrieval would be allowed on all but 144,000 acres of the BLM public lands in the subunit.

Fortymile caribou are among the most important subsistence species in and adjacent to BLM-managed lands in the subunit. Hunting for Fortymile caribou within the subunit is important to all hunters. Demand and competition is high and concentrated along the highway and trails, often resulting in emergency and special actions to close the hunt far ahead of the normal season end. Most harvest occurs off lands managed by BLM and other federal agencies, therefore this decision would not be expected to impact opportunity for federally qualified subsistence hunters under ANILCA. Under Alternative C over the life of the plan, the opportunity for retrieve of game off trail could attract more users; however, impacts would be anticipated to be low.

Impacts from the use of motorized watercraft would be the same for Alternative C as for Alternative B except that the Gold Run suitable segment would be open to use for airboats, hovercraft and personal watercraft.

4.4.4.4.5. Alternative D

Effects from Forest and Woodland Products

Subsistence use forest products are harvested under free-use permits. Free-use permits would not be issued for personal use of timber within the Eagle Recreational withdrawal, and the Fort Egbert Historic Site (840 acres). No impacts to subsistence resources or uses would be anticipated from decisions on uses of any forest and woodland products under this alternative.

Effects from Lands and Realty

Long-term camping would be allowed in all segments of the Fortymile WSR. All camps associated with suction dredging could be located above ordinary high water. Impacts to subsistence resources would be the same as Alternatives A and C.

Effects from Locatable Minerals

Approximately ninety-three percent of BLM lands would be open to locatable minerals under Alternative D. The mineral potential rank is low for most of the open areas. Exploration of the open areas would be likely to occur and would require new access to the claims. If discoveries would be deemed valid, mining could follow. Extraction practices for locatable minerals would

result in removal of vegetation and overburden from large areas impacting wildlife and fish habitat. Activities associated with mining would displace wildlife until suitable habitat would be restored, usually greater than 15–20 years for species important for subsistence. Although subsistence use of fisheries resources in the open areas is thought to be low, impacts to fish habitat would be substantial for this alternative (section 4.4.1.2.4 Fish and Aquatic Species).

Most of the Fortymile caribou calving area on BLM-managed lands would be open to locatable minerals, including 75% of the area of highest calving concentrations. Potential impacts to caribou calving and post-calving habitats would be the greatest in this alternative and include alteration of abundance, distribution, movement and migration of caribou and fragmentation of habitat. Over the life of the plan impacts could be measurable if exploration were to lead to development. Season limits on mining activities would mitigate impacts to caribou on calving and post-calving grounds.

Mining operations would be analyzed under NEPA and authorizations would include required reclamation standards, SOPs developed in this plan, and mitigation measures and practices to restore riparian function and reduce potential for erosion and siltation, and rehabilitate fish and wildlife habitat. An ANILCA Section 810(a) Evaluation and Finding would be conducted for each permitted action. Impacts to subsistence resources and uses would be greater in Alternative D than for all other action alternative as more lands are open to mining, including portions of the Mosquito Fork, South Fork, and mainstem of the Fortymile WSR.

Effects from Salable Minerals

Impacts on subsistence resources and uses would be the same as Alternative B except that ninety-two percent of BLM-managed lands in the subunit would be available for material site sales. Mitigation of impacts would be the same as Alternative B.

Effects from Travel Management

Alternative D differs from Alternative C in the location and size of the RMZs and that cross-country summer use of OHV ($\leq 1,500$ pound curb weight) would be allowed in all areas except 54,000 acres in the Semi-Primitive RMZ (Map 46). Alternative D would have the highest potential of the action alternatives (B-D) for impacts. Cross-country summer OHV would be similar to Alternative A, the existing management, except that curb weight would be reduced. Predicted increases in use of federal public lands and advances in OHV capability over the life of the plan could result in alteration of availability and distribution of subsistence resources where cross-country summer use would be allowed. However, it would be anticipated that most of the hunting pressure would continue to occur off BLM lands, and the travel management decisions in this alternative would have little impact on subsistence uses.

Impacts from the use of motorized watercraft would be the same as Alternative C.

4.4.4.4.6. Alternative E (Proposed RMP)

Effects from Forest and Woodland Products

Personal use of timber would be allowed under a free-use permit on all BLM-managed lands in the subunit. Subsistence use would also require a free-use permit. Demand for free-use permits for forest products has been lacking and would be anticipated to be low over the life of the plan in the subunit. Therefore no impacts on subsistence resources and activities from these decisions

would be expected. Subsistence users would benefit because they would be able to participate in harvest of timber for personal use.

The Fortymile and Mosquito Flats ACECs would be closed to commercial timber sales in Alternative E in addition to those areas closed in Alternatives B–D. Impacts to subsistence uses are expected to be the same as discussed in Effects Common to All Alternatives (section 4.4.4.4.1.).

Commercial harvest of forests products would be considered on all BLM-managed lands within the subunit. Impacts would be the same as Alternative D since the change in area open would be approximately 1000 acres.

Effects from Land and Realty

Same as Alternative D.

Effects from Locatable Minerals

More acres of BLM-managed land would be closed to locatable minerals in Alternative E (745,000 acres) than in Alternative C (623,000 acres); however, the difference is very small. Areas closed would include the Fortymile and Mosquito Flats ACECs, the Fortymile Wild and Scenic River corridor, and the RCAs.

Although most of the area open to locatable minerals is of low potential for development, some small areas of medium potential occur. Exploration with associated access would likely occur in the open areas. Development would likely follow if valid discoveries would be made. Extraction practices for locatable minerals would result in removal of vegetation and overburden from large areas, which would impact wildlife and fish habitat. Activities associated with mining would displace aquatic and terrestrial wildlife until suitable habitat would be restored, usually greater than 15–20 years for terrestrial species important for subsistence. Mining operations would be analyzed under NEPA and authorizations would include required reclamation standards, SOPs developed in this plan, and mitigation measures and practices to restore riparian function and reduce potential for erosion and siltation, and rehabilitate fish and wildlife habitat. An ANILCA Section 810(a) Evaluation and Finding would be conducted for each permitted action. Impacts to subsistence resources and uses would be similar to those in Alternative C and greater than Alternatives A and B as more lands would be open to mining.

Effects from Leasable Minerals

The acres of leasable minerals (fluid and solid) closed would be the same as those closed to locatable minerals and would be similar to Alternative B. Impacts to subsistence use and resources are discussed in Effects Common to All Alternatives section 4.4.4.1. Assumptions for analysis of impacts from leasable mineral decisions are in section 4.2.1.3.3 Leasable Minerals.

Effects from Salable Minerals

Impacts to subsistence uses and resources would be the same as for Alternative B and C. Impacts and mitigation are discussed in Effects Common to All Alternatives section 4.4.4.1.

Effects from Travel Management

Interim travel management within the Fortymile Subunit would remain the same as current management (section 2.7.1.2.5 Travel Management), except that a 1,500 pounds curb weight and 64 inches or less width for summer OHV and 1,000 pounds curb weight and 50 inches or less

width for snowmobiles would be implemented in the interim. A permit would be required for any use of OHV larger than this limit. Within the Fortymile WSR summer travel would be limited to existing trails. Summer OHV use would not be allowed in the Mosquito Flats ACEC.

A comprehensive travel management plan for the Fortymile Subunit would be developed within five years of the Record of Decision. Wildlife and ACEC management decisions in the Proposed RMP/Final EIS would set the sideboards for the step-down travel management plan (section 2.7.2.4.2.6 Travel Management). The management prescriptions for Alternative E would include limitations on OHV use.

No new impacts to subsistence uses, resources, or access to resources would be expected from interim travel management, limits on OHV and snowmobile width and weight, or prescriptions for wildlife, crucial caribou and Dall sheep habitat, and ACEC.

Alternative E prescriptions for OHV use would allow for more access to subsistence resources than would Alternative C, especially access for harvest of caribou. However, damage to habitat and disturbance of subsistence resources would also occur and could be of greater consequence than increased access.

The restriction on the use of motorized boats on non-navigable “wild” segments of the Fortymile WSR would be lifted in Alternative E. These river segments are within the Fortymile caribou herd calving and post-calving grounds. Use of motorized boats in these areas during the spring would introduce a new and substantial disturbance into the area when caribou are at their most vulnerable (calving and post-calving seasons). Impacts to wildlife resources from this decision are discussed further in section 4.4.1.7 Wildlife.

Travel by these methods on the North Fork of the Fortymile WSR would be expected to be limited by the obstacle presented by the Kink, a man-made, rocky, swift water channel connecting the navigable portion of the North Fork with the non-navigable portion. Travel by these means would be more likely to occur on Ingle Creek by hovercraft due to the shallowness and large diameter of substrate. Hovercraft use is uncommon among subsistence users in the area and most commonly used in connection with state suction dredging operations. Hovercraft use by subsistence users would be expected to remain rare. Subsistence users would not be likely to benefit from this decision and impacts to subsistence users, resources and access would be expected to be low.

Impacts to subsistence uses and resources will be further considered during the travel management planning process. NEPA analysis and an ANILCA Section 810(a) Evaluation and Finding would be conducted on the travel management plan. Changes to travel management would be determined through that process and could modify limits and restrictions on OHV designations, motorized boats and other access.

4.4.4.4.7. Cumulative Effects

The effects of past, present and future actions, including the demand for subsistence resources, recreational uses and changes to the landscape as a result of surface-disturbing activities, could affect subsistence uses in the Fortymile Subunit. The demand for resources important for subsistence uses in the Fortymile Subunit is anticipated to increase over the life of the plan, due to general population increases and advances in OHV technology. Impacts include real or perceived conflicts among uses and potential loss of opportunity, either from changes in availability of or access to the resources or displacement of subsistence users by other uses and users.

Surface-disturbances resulting from realty and land use, forestry, and mineral extraction activities could cumulatively affect availability, abundance and distribution of subsistence resources if activities altered riparian function or were in areas and conducted during seasons important to these resources, such as in calving and post-calving areas and/or periods.

The combination of ongoing locatable mineral development occurring on state, federal and private lands in the subunit and future development projected for the subunit, would have cumulative impacts on Fortymile caribou (see wildlife discussion in this chapter). The privatization of State of Alaska or Native corporation lands could lead to additional development. Depending on the location of development, these impacts could include: short- or long-term disturbance to caribou calving habitat, insect relief habitat, and migratory routes; disruption of caribou movements; stress and disturbance impacts to caribou during all seasons of the year; and possible reductions in herd productivity. If extensive activity occurred within the calving/post calving grounds or crucial insect relief habitat, these impacts would be significant.

Development of access roads and trails within the planning area would have the potential to negatively affect wildlife, and thus affect subsistence. These impacts would include habitat fragmentation, increased access into wildlife habitats, increased disturbance impacts, increased potential for mortality and possible alteration of behavior or movement patterns of wildlife. This may also result in an increase in recreational use of the area, resulting in additional competition with federally qualified subsistence users for resources.

Special designation, including ACECs, RCAs, restoration watersheds, and WSRs, would further protect habitats and subsistence opportunities in the Fortymile Subunit.

A more detailed analysis of the cumulative case is discussed in the ANILCA Section 810 evaluation in Appendix J, Section J.2.1.5.

4.5. Impacts Specific to the Steese Subunit

4.5.1. Resources

4.5.1.1. Cultural and Paleontological Resources Steese Subunit

Summary of Effects

See section 4.3.1.3 Effects Common to All Alternatives, Impacts Common to All Subunits.

4.5.1.1.1. Alternative A (No Action)

Effects from Lands and Realty

Four transportation corridors were established in the Steese National Conservation Area to provide access to existing and potential mining areas. All rights-of-way will, as far as possible, be located in one of these corridors. Existing trails and roads will be followed as much as possible. Although the intent is to keep rights-of-way within these designated corridors, such authorizations could be approved outside of the corridors.

The approval of new roads or trails, either within or outside of these corridors, as with all such surface-disturbing activities, would have the potential to directly and adversely impact all manner of cultural and paleontological resources. In addition, there could be an indirect effect on surficial cultural resources; with the creation of new routes of access, more resource use permittees would have access to areas which were previously inaccessible. There would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

Effects from Locatable Minerals

The entire Steese Subunit (including the Steese National Conservation Area) 1,267,000 acres, is currently closed to new locatable mineral entry and mineral leasing. There are 5,000 acres of valid existing federal claims inside the subunit, with mining presently occurring on some of these claims. Of these 5,000 acres, 3,200 are within the Steese National Conservation Area.

Most, if not all, locatable mineral mining that presently occurs is surface-disturbing, open-air mining, and not underground mining which is accessible through shafts and adits that would otherwise leave the upper ground surface undisturbed. As such, locatable mineral mining does directly and adversely impact all manner of cultural and paleontological resources.

Three types of placer mining operations occur in the subunit: (1) suction dredge operations, where the only surface disturbance relates to the supporting camp, (2) small-scale placer mines, where disturbance is limited to less than five acres per operation, with an assumed total area of 20 to 30 acres for the life of each mine, and (3) large-scale placer mines, where disturbance is estimated at five to twenty acres per operation, with an assumed total area of 60 to 80 acres for the life of each mine.

Further assumptions for locatable minerals for Alternative A in the Steese Subunit indicate one suction dredge operation in any given year, seven small-scale placer mines, and two large-scale mines. This equates to 286 to 374 acres of disturbed ground, in areas that very likely contain

evidence of prior, historic mining operations, which have occurred in some drainages in the Steese Subunit for about 130 years. Much of this disturbance would likely occur in the Steese National Conservation Area because the majority of the existing claims are within the National Conservation Area. Disturbance to prehistoric sites by any particular operation would have to be assessed on a basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources both inside and outside of the Steese National Conservation Area.

In addition, new access roads often need to be constructed in order to reach mineral claims. The construction of new roads not only has a direct and adverse effect on cultural and paleontological resources, but would also have an indirect effect by providing new access by other users to previously isolated lands. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Effects from Recreation

Four recreation management units are currently identified, Primitive, Semi-Primitive, Birch Creek WSR, and Research Natural Areas. Otherwise, special recreation management areas (SRMA), recreation settings, and recreation management zones are not currently addressed, and thus have no effects upon cultural resources. At present, a wide range of recreational opportunities are available and/or are authorized in the Steese Subunit including: an established National Recreation Trail, private and commercial floating opportunities on the Birch Creek WSR, and both motorized and non-motorized overland travel. The construction of infrastructure to support these activities can be ground disturbing, and thus could potentially directly affect cultural and paleontological resources. Also, visitors to the public lands have the potential to inadvertently find surficial cultural and paleontological resources, and thus would have the potential to adversely impact such resources, either intentionally or unintentionally.

Effects from Travel Management

Current management indicates that OHV use of vehicles greater than 1,500 pounds are prohibited without a permit inside the Steese Subunit, otherwise it is allowed. Exceptions to this statement are that OHV use inside the Research Natural Areas (RNAs) in the Steese Subunit are not allowed (3,000 acres), nor is summer OHV use allowed in the Birch Creek WSR corridor and the currently designated Primitive management units (142,000 acres).

The use of motorized watercraft in the Birch Creek WSR Corridor is currently not allowed, except for limited local exceptions. Use of watercraft has minimal direct impact on cultural and paleontological resources. Use of watercraft has the potential for indirect impacts on these resources by providing access to otherwise inaccessible lands. With river access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Based upon current trends, the BLM assumes ever increasing travel visitation and use, both motorized and non-motorized, in the Steese Subunit. Since OHV use accounts for a sizeable portion of travel-related activities in the Steese National Conservation Area, it is anticipated that the demand for this activity will continue to grow in the future, necessitating construction of additional trails and mechanisms for managing these trails. Construction of new trails, like any other surface-disturbing activities, would have the potential to directly and adversely affect cultural and paleontological resources.

In addition, the construction of new trails would also have an indirect effect by providing new access to previously isolated lands. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.5.1.1.2. Alternative B

Effects from Lands and Realty

Under Alternative B, only two of the transportation corridors would be retained in the Steese National Conservation Area. Since few rights-of-way are anticipated, and since rights-of-way can be approved outside of the corridors, the effects of Alternative B would be essentially the same as Alternative A.

Effects from Locatable Minerals

Alternative B has the same direct and indirect effects on cultural and paleontological resources as outlined in Alternative A, except the potential impacts to these resources would be increased as new areas would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative B, about 1,231,000 acres would be closed and about 34,000 acres would be open to locatable mineral entry (Map 32). Closed areas include the BLM's Central Administrative Site, disposal lands, and the Steese SRMA, the latter of which includes the Steese National Conservation Area and the Birch Creek WSR.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Steese Subunit. Further assumptions for locatable minerals for Alternative B in this subunit indicate one suction dredge operation in any given year, eight small-scale placer mines, and two large-scale mines. This equates to 306-404 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred in some drainages in the Steese Subunit for about 130 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

A wide range of recreational opportunities would be available and/or are authorized under Alternative B, in which the Steese Subunit is divided into the Steese SRMA and those lands outside of the SRMA. The Steese SRMA (about 1,246,000 acres) includes the Steese National Conservation Area and the Birch Creek WSR. In Alternative B, the SRMA would be divided into seven RMZs (Map 49), each with a well defined "setting character," ranging from Primitive, to Semi-Primitive, to Backcountry. The recreation management objectives associated with each of these are well defined, with differing emphases on building and maintaining facilities, the establishment and maintenance of winter and summer trails, and the range of summer and winter OHV uses. Construction of facilities by the BLM to meet recreational demand can directly and adversely impact surface and subsurface cultural and paleontological resources. The BLM assumes a ten to fifteen percent increase over the life of the plan in demand for recreational users and visitation (both motorized and non-motorized), resource damage, and user-resource conflicts. Any increased visitation to the public lands has a concurrent potential increase for inadvertently finding surficial cultural and paleontological resources and adversely impacting such resources, either intentionally or unintentionally.

Effects from Travel Management

Under Alternative B, use inside the RNAs (3,000 acres) continues to be closed to all motorized vehicles. For the remainder of the Steese Subunit (1,264,000 acres), OHV use is limited only to the winter months with adequate snowfall and is limited to snowmachines weighing 1,000 pounds or less.

There would be little to no direct impacts to cultural or paleontological resources by the proposed OHV uses in this alternative, as they are limited to winter months when ground cover of snow would protect most types of cultural resources and all paleontological resources.

The use of most forms of motorized watercraft in the Birch Creek WSR Corridor would not be allowed on non-navigable sections of the river, except for limited local exceptions. Use of watercraft has minimal direct impact on cultural and paleontological resources. Use of watercraft has the potential for indirect impacts on these resources by providing access to otherwise inaccessible lands. With river access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

The current visitation rate of increase for the Steese Subunit is approximately ten percent per year, which is expected to be maintained for the foreseeable future. Although a large portion of this is assumed to be by OHV users, there would still be increased use by non-motorized users in the subunit, both on and off established trails. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

4.5.1.1.3. Alternative C

Effects from Lands and Realty

Same as Alternative B.

Effects from Locatable Minerals

Alternative C has the same direct and indirect effects on cultural and paleontological resources as outlined in Alternatives A and B, except the potential impacts to these resources would be increased as new areas would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative C, 993,000 acres would be closed and about 274,000 acres of previously withdrawn lands would be open to locatable mineral entry. The closed areas would include the Steese ACEC, the RNAs, disposal lands, the Birch Creek WSR Corridor, and portions of the Steese National Conservation Area (Map 34). Alternative C has more acres opened to potential mineral activity than Alternative B, and thus would have a greater potential adverse impact to cultural and paleontological resources. Most of the new mining claims would be located within the Steese National Conservation Area, as these are the areas with higher mineral potential.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Steese Subunit. Further assumptions for locatable minerals for Alternative C in this subunit indicates nine suction dredge operations in any given year, 15 small-scale placer mines, and four large-scale placer mines. This equates to roughly 600-900 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred in some drainages in the Steese Subunit for about 130 years.

Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

As in Alternative B, a wide range of recreational opportunities would be available and/or are authorized under Alternative C. The Steese SRMA and lands outside the SRMA would be identified for the same areas. In Alternative C the SRMA would be divided into 10 RMZs (Map 50), each with a well defined “setting character,” ranging from Primitive, Semi-Primitive, Backcountry, Middlecountry, and Frontcountry. Relative to Alternative B, Alternative C has added Frontcountry and Middlecountry settings. The recreation management objectives associated with each of these settings are well defined, with differing emphases on building and maintaining facilities, establishing and maintaining trails, and the range of summer and winter OHV uses.

Alternative C has the same assumptions for increased recreational use over the life of the plan as Alternative B, and has the same potential types of direct and indirect impacts to cultural and paleontological resources. The potential for effects would be slightly higher under Alternative C than Alternative B because there would be a greater emphasis on developing facilities to encourage and enhance recreational opportunities. This could potentially result in more visitors and increased access to areas that are currently difficult to access.

Effects from Travel Management

Under Alternative C, use inside the RNAs (3,000 acres) continues to be closed to all motorized vehicles. For most of the remainder of the Steese Subunit (680,000 acres), OHV use is limited only to the winter months with adequate snowfall and is limited to snowmachines weighing 1,000 pounds or less. As a result, Alternative C allows summer OHV use to 566,000 acres of the subunit, but is limited to existing trails.

There would be little to no direct impacts to cultural or paleontological resources by the proposed OHV uses in this alternative. Most of the subunit remains limited to winter months when ground cover of snow would protect most types of cultural resources and all paleontological resources, and the remainder of the area is opened in the summer to existing trails only. The creation of unauthorized trails by summer OHV users, however, is likely to continue to increase. Cultural resources with surface traces, or those close to the surface, are likely to be directly and adversely impacted by this ever-expanding creation of unauthorized OHV trails.

The use of most forms of motorized watercraft in the Birch Creek WSR Corridor would be the same as Alternative B.

The current visitation rate of increase for the Steese Subunit is approximately ten percent per year, which is expected to be maintained for the foreseeable future. Although a large portion of this is assumed to be by OHV users, there would still be increased use by non-motorized users in the subunit, both on and off established trails. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

4.5.1.1.4. Alternative D

Effects from Lands and Realty

Alternative D would be the same as Alternative B, except that there would be no designated transportation corridors. The lack of corridors would have a minimal effect on cultural and paleontological resources because few rights-of-way would be authorized. Any ROWs would be assessed on a case-by-case basis in the future, with full environmental analysis performed at that time.

Effects from Locatable Minerals

Alternative D would have the same direct and indirect effects on cultural and paleontological resources as outlined in Alternative A, except the potential impacts to these resources would be increased as new areas would be opened to potential mining activities and more roads would potentially need to be built to access those areas. Approximately 585,000 acres would be closed and about 682,000 acres of previously withdrawn lands would be open to locatable mineral entry, most of this in the Steese National Conservation Area. The closed areas would include the Steese ACEC, the RNAs, disposal lands, the Birch Creek WSR Corridor, and portions of the Steese National Conservation Area (Map 36). Alternative D has more acres opened to potential mineral activity than Alternatives B, C, and E, and thus would have a greater potential adverse impact to cultural and paleontological resources. As in Alternative C, most of the new mining claims would be located in the Steese National Conservation Area.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Steese subunit. Further assumptions for locatable minerals for Alternative D indicates 12 suction dredge operations in any given year, 24 small-scale placer mines, and four large-scale placer mines. This equates to 768–1088 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred in some drainages in the Steese Subunit for about 130 years. Disturbance to prehistoric sites by any particular operation would have to be assessed on a project-specific basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources.

Effects from Recreation

A wide range of recreational opportunities would be available and/or are authorized under Alternative D. Same as Alternatives B and C, the Steese Subunit is divided into the SRMA and those lands outside of the SRMA. In Alternative D the SRMA would be divided into nine RMZ (Map 51). Alternative D, however, has more acres in Frontcountry and Middlecountry than does Alternative C. The recreation management objectives associated with each of these settings would be the same as those defined in Alternatives B and C.

Alternative D has the same assumptions for increased use over the life of the plan as Alternative B, and has the same potential types of direct and indirect impacts to cultural and paleontological resources. The potential for effects would be slightly higher under Alternative D than Alternatives B or C because there would be a greater emphasis on developing facilities to encourage and enhance recreational opportunities. This could potentially result in more visitors and increased access to areas that are currently difficult to access.

Effects from Travel Management

Under Alternative D, use inside the RNAs (3,000 acres) continues to be closed to all motorized vehicles. For most of the remainder of the Steese Subunit (733,000 acres), summer OHV use is allowed, but is limited to 1,500 pounds or less. OHV use is limited to only the winter months with

adequate snowfall in the remaining 513,000 acres of the subunit, and is limited to snowmachines weighing 1,000 pounds or less.

The potential for direct impacts to cultural resources increases dramatically for this Alternative, relative to all others, because of the open use of summer OHV use (1,500 pound limitation) on 733,000 acres. The creation of unauthorized trails by summer OHV users would likely increase dramatically. Cultural resources with surface traces, or those close to the surface, are likely to be directly and adversely impacted by this ever-expanding creation of trails.

The use of most forms of motorized watercraft in the Birch Creek WSR Corridor would be the same as Alternative B.

The current visitation rate of increase for the Steese Subunit is approximately ten percent per year, which is expected to be maintained for the foreseeable future. Although a large portion of this is assumed to be by OHV users, there would still be increased use by non-motorized users in the subunit, both on and off established trails. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

4.5.1.1.5. Alternative E (Proposed RMP)

Effects from Lands and Realty

Same as Alternative D.

Effects from Locatable Minerals

Alternative E has the same direct and indirect effects on cultural and paleontological resources as outlined in Alternative A, except the potential impacts to these resources would be increased as new areas would be opened to potential mining activities and more roads would potentially need to be built to access those areas. In Alternative E, about 1,237,000 acres would be closed and about 30,000 acres would be open to locatable mineral entry (Map 87). Closed areas include the BLM's Central Administrative Site, disposal lands, and the Steese SRMA, the latter of which includes the Steese National Conservation Area and the Birch Creek WSR. Other than Alternative A, the No Action alternative, Alternative E would have the least impact on cultural and paleontological resources as this alternative would open the least amount of lands to mineral development.

See Alternative A for assumptions about the nature and type of placer mining operations that are likely to occur within the Steese Subunit. Further assumptions for locatable minerals for Alternative E in this subunit are the same as Alternative B.

Effects from Recreation

As in Alternative B, a wide range of recreational opportunities would be available and/or are authorized under Alternative E. The Steese SRMA and lands outside the SRMA are identified the same in Alternatives B, C, D, and E. In Alternative E, the SRMA would be divided into 9 RMZs (Map 47), each with a well-defined "setting character," ranging from Primitive, Semi-Primitive, Backcountry, Middlecountry, and Frontcountry. Relative to the amount of land placed within each of these five categories, Alternative E would be placed between Alternatives B and C, with B having more acres of Primitive land and less acres in Semi-Primitive and Backcountry. The recreation management objectives associated with each of these settings are well defined, with

differing emphases on building and maintaining facilities, establishing and maintaining trails, and the range of summer and winter OHV uses.

Alternative E has the same assumptions for increased recreational use over the life of the plan as Alternative B, and has the same potential types of direct and indirect impacts to cultural and paleontological resources. As implied above, the potential for effects to cultural and paleontological resources would be higher under Alternative E than Alternative B because there is a greater emphasis on developing facilities to encourage and enhance recreational opportunities, but less so than in Alternative C.

Effects from Travel Management

A Travel Management Plan would be developed for the Steese Subunit after approval of the RMP. Until that time, interim management would be the largely that same as Alternative A, with a few exceptions, including an opening up of the 3,000 acres in the RNAs to winter snowmachine use, and the allowance of airboats and hovercraft on both navigable and non-navigable sections of the rivers, including the Birch Creek WSR. These new exceptions to current management practices would not directly affect cultural and paleontological resources, except to potentially increase the indirect effects on cultural resources by the removal of the motorized watercraft prohibition by providing access to otherwise previously inaccessible lands. With access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.5.1.2. Fish and Aquatic Species Steese Subunit

Summary of Effects

Fish and aquatic resources would be primarily affected by surface-disturbing activities (such as placer mining or trail construction) which alter stream channels, remove or damage riparian vegetation, or result in soil erosion and sedimentation to fish and aquatic habitat. The level of impact would depend on the success and adequacy of protective measures. Alternative A would provide the greatest protection to fish and aquatic resources within the planning area because the entire subunit is currently closed to new locatable mineral entry. Alternatives B, C, and D open increasingly more acres and stream miles for locatable mineral entry, respectively. Alternative D would have the greatest potential to impact fish and aquatic resources.

Table 4.13. Stream Miles and Acres Open to Locatable Mineral Entry by Alternative, Steese Subunit

STEESE SUBUNIT (BLM-managed lands)	ALTERNATIVES				
	A	B	C	D	E
Stream miles	1,785	1,785	1,785	1,785	1,785
Stream miles open to locatables (proposed)	0	40	370	870	60
Stream miles open to locatables (proposed) plus miles within current valid federal claims	100	140	430	920	140
Stream miles within RCAs in areas open to locatables (proposed)	N/A	10 (6%)	10 (2%)	60 (6%)	0
Stream miles outside RCAs in areas open to locatables (proposed)	N/A	40 (25%)	360 (85%)	810 (89%)	60 (45%)
Acres open to locatables (proposed)	0	34,000	274,000	695,000	30,000

STEESE SUBUNIT	ALTERNATIVES				
(BLM-managed lands)	A	B	C	D	E
Acres open to locatables (proposed) plus acres within current valid federal claims	7,000	41,000	279,000	699,000	34,000
Anticipated stream gravel disturbance by suction dredging during life of plan measured in cubic yards	40,000	40,000	360,000	480,000	40,000
Potential impacts to fish and aquatic habitat (1-5, 5= greatest)	1	3	4	5	2

4.5.1.2.1. Alternative A (No Action)

Effects from Leasable Minerals

No lands within the Steese Subunit are open to leasing of either fluid minerals (oil and gas) or solid leasables (coal). There are no existing mineral leases. Under this alternative, no impacts to fisheries and aquatic resources resulting from leasable minerals would occur.

Effects from Locatable Minerals

Of the following effects, seventy-one percent would occur within the Steese National Conservation Area. No additional lands within the Steese subunit would be open to new locatable mineral entry. Locatable mineral development would be limited to valid existing claims. Currently, there are 7,200 acres and 106 miles of stream on active federal mining claims in the Steese Subunit that have been mined or have the potential to be mined. Of these 7,200 acres and 100 miles of stream, seventy-one percent occur within the Steese National Conservation Area. The Birch Creek WSR (within one-half mile of the banks) is withdrawn from locatable minerals in all alternatives (ANILCA 606(a)). The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative A is estimated at up to 370 acres, or approximately six miles of stream over the life of the plan.

The indirect impacts would likely extend upstream and downstream of the mine operation. The extent of these impacts are difficult to quantify, but could more than double the miles of stream directly affected by the placer operation. Under Alternative A, roughly 10 suction dredge operations are anticipated over the life of the plan. Each operation is anticipated to last two years. The amount of stream gravel disturbed from one suction dredging operation is estimated to be 1,800 cubic yards per year. Over the life of the plan 36,000 cubic yards of stream gravel could be disturbed. The context and intensity of impacts would depend on the timing, location, and proximity of the operation to other operations. Given the dispersed nature of suction dredging operations coupled with the limited number of existing federal claims, impacts are expected to be localized and may be short- or long-term.

Under Alternative A, protection of fisheries and aquatic resources would rely on the existing regulations and mitigation measures developed during project-specific NEPA analysis. Mining operations within the Steese National Conservation Area require a Plan of Operation, which would allow for the integration of reclamation measures specifically designed to rehabilitate fisheries habitats. Fish species impacted from locatable mineral activity in this subunit include both resident and anadromous species. Impacts to fish and aquatic resources in this alternative would be considered low to moderate, but could have long-term effects resulting in an overall decrease in levels of fish populations at the local level. Compared to the other alternatives,

Alternative A would likely provide the greatest protection to fisheries and aquatic resources, because it would result in the least amount of potential new disturbance. However, under this alternative, fish and aquatic resources may not benefit from the more rigorous reclamation standards and SOPs proposed in the action alternatives which are designed to minimize impacts and reduce recovery time. As such, Alternative A may result in longer duration impacts as compared to the action alternatives.

Effects from Recreation

Impacts would be similar to those discussed as common to all subunits section 4.3.1.4.1. There are no SRMAs that would set recreation objectives or develop visitor use limits. Unmanaged trail proliferation would continue with no guidance for proper construction and placement for new trails. Alternative A would provide the least protection to fish and aquatic habitats from recreation activities. However, impacts to fish and aquatic habitat are expected to be minimal.

Effects from Travel Management

Current OHV designations in the Steese Subunit are Limited, allowing summer cross-country travel of OHVs weighing 1,500 GVWR and less except in RNAs, the Birch Creek WSR Corridor, and the Primitive Management Unit. Unmanaged trail proliferation would continue with no guidance for proper construction and placement of new trails. Given the assumption of increased OHV use during the life of the plan, the unauthorized and unmanaged proliferation of trails is also likely to increase with a resulting increase in erosion and sediment impacts. Since the majority of the subunit is open to off-road travel by OHVs weighing 1,500 GVWR or less, and assuming increased OHV use during the life of this plan, this alternative may have minimal and localized impacts on fish and aquatic habitats. Alternative A has the most potential to adversely effect fish and aquatic habitat compared to Alternatives B, C, D, and E.

Effects from Special Designations

The following special designations and effects would occur within the Steese National Conservation Area. The Birch Creek WSR contains high-value fishery resources, supporting three species of salmon and numerous resident fish species. The river corridor is closed to mineral leasing and location and would remain closed in all alternatives. Given the adverse short- and long-term impacts to fisheries and aquatic resources associated within mining, areas closed to mineral entry would generally maintain aquatic habitats and fish and aquatic populations.

Fish and aquatic resources are not of particularly high value within the Mount Prindle (2,800 acres) and Big Windy Hot Springs RNAs (160 acres), however increased resource protection in these areas could be beneficial to fish and aquatic resources. These RNAs would be retained in all alternatives.

4.5.1.2.2. Alternative B

Effects from Leasable Minerals

Effects from mineral leasing would occur mostly outside of the Steese National Conservation Area. Approximately 34,000 acres would be open to oil and gas leasing, but leasing would not occur without further NEPA analysis. Interest from industry is expected to be limited due to the lack of high potential oil and gas areas on BLM lands. Seismic exploration would be allowed during winter months after the tundra is frozen. If seismic exploration does occur, it would likely

occur in high potential areas, but is unlikely during the life of the plan. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal to non-existent.

Potential threats to overwintering fish from seismic surveys would primarily stem from: 1) stress associated with acoustic energy pulses transmitted into the ground directly over overwintering pools, and 2) physical damage to overwintering habitat caused by seismic vehicles. Large overwintering pools might allow fish to flee the immediate area of intense stress where fish occupying small pools might not have that option. Depending on proximity, adult fish could suffer no more than temporary discomfort, where intense acoustical pulses could be lethal to juveniles. Given that overwintering habitat represents a small percentage of the subunit, it is unlikely that seismic transmissions would occur directly over overwintering sites with any degree of regularity. Furthermore, seismic crews could avoid known overwintering areas. Overall, any affects to overwintering fish caused by winter seismic surveys would be localized and would likely to have little effect on fish populations within the planning area.

Effects from Locatable Minerals

The level of effects within the Steese National Conservation Area would be similar to Alternative A. The Steese Subunit contains 1,275,000 acres of BLM lands and 41,000 of those acres (outside of the National Conservation Area) would be open to locatable mineral entry in Alternative B (Map 32). Including valid existing federal mining claims, approximately 140 miles of stream would be open to locatables, with 10 (six percent) of those miles occurring in RCAs which require more rigorous standards for reclamation. Under Alternative B, protection of fish and aquatic habitat in ninety-four percent of the streams open to locatables would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis. Of the stream miles open to locatables, one mile occurs within a high mineral potential area. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative B is estimated at up to 500 acres, or approximately seven miles of stream over the life of the plan.

The indirect impacts of mining would likely extend upstream and downstream of the mine operation. Indirect impacts to upstream habitats would include channel gradient adjustments (downcutting), while downstream impacts would include sedimentation and pool filling. The extent of these impacts are difficult to quantify, but could more than double the miles of stream directly affected by the placer operation. The anticipated number of suction dredging operations is 10 (same as Alternative A) and the impacts from suction dredging would be the same as described in Alternative A.

Impacts to fish and aquatic resources under this alternative would likely be low because only eight percent of the stream miles within the subunit are open to locatables and only one mile falls within a high mineral potential area. Based on the amount of land opened to mineral entry, this alternative would potentially provide more protection to fish and aquatic habitat than Alternatives C and D, but less than A and E.

Effects from Recreation

Impacts would be similar to those discussed as common to all subunits in section 4.3.1.4.1. Under Alternatives B, C, and D, the Steese SRMA would contain RMZs, each of which would be managed by for specific activities, experiences, and benefits in a corresponding prescribed recreation setting (Primitive, Semi-Primitive, Backcountry, Middlecountry, or Frontcountry).

Primitive Zones would have the lowest potential impacts to fish and aquatic habitat, where Frontcountry zones would have the highest.

In Alternative B, the Steese SRMA (1,246,000 acres) would include the Steese National Conservation Area and the Birch Creek WSR Corridor and be divided into seven RMZs, which would be managed for Primitive, Semi-Primitive, or Backcountry setting. This alternative has by far the largest area managed for a Primitive setting and would provide more protection to fish and aquatic habitat than Alternatives A, D, C, and E (in that order). Impacts to fish and aquatic habitat are expected to be minimal under this alternative.

Effects from Travel Management

This Alternative proposes interim management similar to Alternative A until travel management plans can be completed. Under Alternative B, the entire subunit is closed to OHVs during summer months (May 1 through October 15) without a permit or approved plan of operations. There is one exception which is federally qualified subsistence hunters would be able to apply for a permit allowing them to use OHVs within the Birch Creek WSR corridor. The use of wheeled and/or tracked vehicles by federally qualified subsistence hunters within the Birch Creek Creek WSR corridor may result in some localized adverse impacts to fish and aquatic resources. These impacts may be in the form of erosion and sedimentation to the stream from newly pioneered trails and streambank instability if new stream crossings were created. Birch Creek and some of its tributaries are listed as anadromous streams in ADF&G Anadromous Waters Catalog. Both wheeled and tracked vehicles are only allowed to cross anadromous streams at authorized stream crossings listed on ADF&G website or after obtaining an Individual Fish Habitat Permit with stipulations from ADF&G. Currently, there are no authorized stream crossings for anadromous streams in the Steese subunit. Impacts to fish and aquatic habitat would be minimized with the protection of the OHV monitoring plan, which closes or restricts areas open to OHV use if resource damage such as erosion, sedimentation, and water pollution occurs. This Alternative would potentially provide more protection to fish and aquatic habitat than Alternative A, but less than C, D, or E. Fish and aquatic resources generally benefit when areas are closed to OHVs, because closure reduces potential impacts associated with route development, erosion, and stream crossings. Impacts to fish and aquatic habitat under Alternative B would be minimal or non-existent.

Effects from Special Designations

The following special designations and effects would occur within the Steese National Conservation Area. In addition to the impacts from RNAs and the Birch Creek WSR described under this subsection for Alternative A, 924,000 acres would be designated as the Steese ACEC (Map 64) to protect habitat for the Fortymile caribou herd and Dall sheep. The ACEC would remain closed to locatable and leasable mineral entry, subject to valid existing rights. Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact. A mining Plan of Operations would be required on any mining activity within the ACEC (43 CFR 3809.11(c)(3)). Birch Creek contains high-value fishery resources, supporting three species of salmon and numerous resident fish species. This ACEC includes a large portion of the Birch Creek watershed and would provide additional protection to fish and aquatic habitat outside of the Birch Creek WSR Corridor. Impacts to fish and aquatic habitat would be the most beneficial under this alternative.

Big Windy Creek would be recommended as suitable for designation in the National Wild and Scenic Rivers System. Fish and aquatic habitat resources are not of particularly high value in

Big Windy Creek, however the river corridor would be closed to mineral leasing and location. Given the adverse short- and long-term impacts to fisheries and aquatic resources associated within mining, mineral entry closure on Big Windy Creek would promote maintenance of aquatic habitats and fish and aquatic populations.

4.5.1.2.3. Alternative C

Effects from Leasable Minerals

Effects from mineral leasing under this alternative occur mostly outside of the Steese National Conservation Area. The effects are the same as Alternative B, except 274,000 acres would be open to oil and gas leasing. Potential impacts under Alternative C would be greater than Alternative B, because more acres would be open to disturbance.

Effects from Locatable Minerals

The following effects would occur primarily within the Steese National Conservation Area. Approximately 279,000 acres would be open to locatable minerals in Alternative C. Including valid existing federal mining claims, approximately 430 miles of stream would be open to locatable minerals with 10 (two percent) of those miles occurring in RCAs. Those 10 stream miles would be subjected to more rigorous reclamation standards. Protection of fish and aquatic habitat in 360(ninety-five percent) miles of stream open to locatables would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis.

The likelihood of impacts would be greatest in areas of medium to high mineral potential, which equates to roughly 250 of the 430 river miles that are open to locatable minerals under Alternative C (BLM 2009c). The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative C is estimated at up to 770 acres, or 11 miles of stream over the life of the plan. The anticipated number of suction dredging operations during the life of this plan is 90, a substantial increase compared to Alternatives A and B. These operations could potentially result in disturbance of 360,000 cubic yards of stream gravel over the life of the plan. Impacts from suction dredging are discussed in section 4.3.1.4 Impacts Common to All Subunits.

Based on the number of stream miles (250) that would be open to locatable minerals in moderate to high mineral potential areas and the absence of higher reclamation standards on the majority of these streams (ninety-five percent), adverse impacts to fish and aquatic resources under this alternative may be readily detectable and long-term (10–20 years) within these areas. This could result in a downward trend of fish populations at the watershed scale over the life of this plan. Alternative C would provide less protection to fish and aquatic habitat than Alternatives A and B, but more protection than Alternative D.

Effects from Recreation

Impacts would be similar to those discussed as common to all subunits in section 4.3.1.4.1. The Steese SRMA would include the same lands as in Alternative B but would be divided into 10 RMZs. Recreation settings would range from Primitive (3,000 acres) to Frontcountry. This alternative allows for increased development of visitor facilities, landscape modifications, and group size as compared to Alternative B, and has greater potential to adversely effect fish and aquatic resources due to increased disturbance. Alternative C would provide more protection to fish and aquatic habitat than Alternatives A and D, but less than Alternative B and E based

on the amount of potential disturbance. Impacts to fish and aquatic habitat are expected to be minor under this alternative.

Effects from Travel Management

Under Alternative C, forty-seven percent of the subunit would be open to summer use (May 1 through October 15) of OHVs weighing 1,000 pounds curb weight and less on existing routes and for the retrieval of game. Impacts to fish and aquatic resources would be highly localized and associated with route erosion and stream crossings. Impacts are expected to be minor and generally short-term under this alternative. Alternative C would provide less protection to fish and aquatic habitat than Alternative B and E, but more than Alternatives D and A.

Effects from Special Designations

In addition to the impacts from RNAs and the Birch Creek WSR described under this subsection for Alternative A, 457,000 acres would be designated as crucial caribou and Dall sheep habitat displayed on Map 67. Alternative C provides less protection to fish and aquatic resources than does Alternative B and E, because the amount of crucial caribou and Dall sheep habitat is smaller and Big Windy Creek would not be recommended for designation as a WSR under Alternative C allowing for an increase of potential disturbance.

4.5.1.2.4. Alternative D

Effects from Leasable Minerals

The effects from mineral leasing under this alternative occur mostly outside of the Steese National Conservation Area. The effects are the same as Alternative B, except 682,000 acres would be open to oil and gas leasing. Potential impacts under Alternative D would be the greatest because it allows for the greatest amount of disturbance.

Effects from Locatable Minerals

The following effects would occur primarily within the Steese National Conservation Area. Alternative D results in the largest area being opened to locatable mineral entry compared to the other alternatives, with 699,000 acres being available. Including valid existing federal mining claims, this corresponds to approximately 920 miles of stream that would be open to locatables, with only six percent of those miles occurring in RCAs which require higher standards for reclamation. Compared to Alternative E, this alternative allows locatable mineral entry on 750 additional miles of stream which have less stringent requirements than those in RCAs. If mined, desired future conditions for aquatic habitats and stream function may not be achieved for 10 to 20 years on up to 750 additional miles of stream when compared to the other Alternatives.

Under Alternative D, protection of fish and aquatic habitat on 810 miles (ninety-nine percent) of the streams open to locatables would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis. Of the stream miles open to locatables, 400 stream miles fall within areas having medium to high mineral potential. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative D is estimated at 1,040 acres, or approximately 15 miles of stream over the life of the plan.

Alternative D would allow 45 miles of anadromous stream in the Preacher Creek basin to be directly impacted by locatable mineral entry, where in Alternatives B, C, and E Preacher Creek is designated as an RCA and is closed to locatables. The Preacher Creek basin contains medium mineral potential and has reasonable access, as such, it is probable that widespread development would occur within this basin beginning in the headwater areas and progressing downstream. The localized loss of riparian and streambank vegetation and creation of areas with channel instability could be widespread creating a matrix of degraded habitats interspersed with “islands” of intact riparian areas. These islands would likely exhibit degraded pool and spawning habitat quality resulting from catchment erosion and downstream sedimentation. In an unpublished report from 1985, a BLM fish biologist stated that the degradation of other portions of the Birch Creek drainage from placer mining activity may increase the importance of Preacher Creek for the production of Arctic grayling within the Birch Creek system. More recently in 2005, BLM resource specialists observed adult Chinook salmon in Preacher Creek within the area open to locatables under this alternative (verbal communication). The resulting impacts to the fish and aquatic community could be significant and long-term (10 to 20 years), adversely affecting Chinook and grayling populations.

Approximately 120 suction dredging operations are anticipated during the life of this plan, potentially resulting in disturbance of up to 480,000 cubic yards of stream gravel over the life of this plan. Impacts from suction dredging are discussed in the section 4.3.1.4 Impacts Common to All Subunits, Fish and Aquatic Species.

This alternative has the potential to significantly impact both Chinook salmon spawning habitat and high quality resident fish habitat in the Preacher Creek drainage. This alternative has the greatest potential impact to fish and aquatic habitat.

Effects from Recreation

Impacts would be similar in type to those discussed as common to all subunits in section 4.3.1.4.1. The Steese SRMA would include the same lands as in Alternatives B, C, and E, but would be divided into nine RMZs. Recreation settings would range from Primitive (3,000 acres) to Frontcountry. Much less area would be managed for a Semi-Primitive setting. This alternative allows for the greatest development of visitor facilities, landscape modifications, and group size. However, impacts to fish and aquatic habitat should be minor and easily mitigated. Alternative D would provide more protection to fish and aquatic habitat than Alternative A, but less than Alternatives B, C, and E.

Effects from Travel Management

Under Alternative C, sixty percent of the subunit would be open to summer cross-country use of OHVs weighing 1,000 pounds curb weight or less. Unmanaged trail proliferation may occur with no guidance for proper construction and placement of new trails. Given the assumption of increased OHV use during the life of the plan, the unauthorized and unmanaged proliferation of trails is also likely to increase with a resulting increase in erosion and sediment impacts. Impacts to fish and aquatic resources would be highly localized and associated with route erosion and disturbance to riparian vegetation. Impacts are expected to be minor and generally short-term under this alternative. Alternative D would provide more protection to fish and aquatic habitats than Alternative A, but less than Alternatives B, C, and E.

Effects from Special Designations

In addition to the impacts from RNAs and the Birch Creek WSR described under this subsection for Alternative A, 193,000 acres would be designated as the Steese ACEC (Map 66). Alternative D provides less protection to fish and aquatic habitats than Alternatives B, C, and E, because the ACEC is smaller and includes less fish habitat.

4.5.1.2.5. Alternative E (Proposed RMP)

Effects from Leasable Minerals

This alternative recommends closing the entire Steese National Conservation Area to mineral leasing, while Alternative C recommended closing 80 percent. The effects are the same as described in Alternative B, but 30,000 acres would be open to leasable minerals. The potential impacts to fish and aquatic resources would be greatest in Alternatives D, C, and B.

Effects from Locatable Minerals

The level of effects within the Steese National Conservation Area would be similar to Alternative A and B, but fewer acres would be open for Alternative E. The Steese Subunit contains 1,267,000 acres of BLM lands and 30,000 of those acres (outside of the National Conservation Area) would be open to locatable mineral entry in Alternative E (Map 38). RCAs in this Alternative would be closed to locatables. Including valid existing federal mining claims, approximately 60 miles of stream would be open to locatables, none of which would occur in RCAs which require more rigorous standards for reclamation. Under Alternative E, protection of fish and aquatic habitat in one hundred percent of the streams open to locatables would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis. Of the stream miles open to locatables, one mile occurs within a high mineral potential area. The anticipated number of acres directly disturbed by small- and large-scale placer mines under Alternative E is estimated at up to 500 acres, or approximately seven miles of stream over the life of the plan.

The indirect impacts of mining would likely extend upstream and downstream of the mine operation. Indirect impacts to upstream habitats would include channel gradient adjustments (downcutting), while downstream impacts would include sedimentation and pool filling. The extent of these impacts are difficult to quantify, but could more than double the miles of stream directly affected by the placer operation. The anticipated number of suction dredging operations is 10 (same as Alternative A) and the impacts from suction dredging would be the same as described in Alternative A.

Impacts to fish and aquatic resources under this alternative would likely be low and localized because all of the high value fish and aquatic resources (RCAs) identified would be closed to locatable minerals, only 8 percent of the stream miles within the subunit would be open to locatable minerals, and only one mile falls within a high mineral potential area. Based on the amount of land opened to mineral entry, this alternative would potentially provide more protection to fish and aquatic habitat than Alternatives B, C, and D, but less than A.

Effects from Recreation

Impacts would be similar to those discussed as common to all subunits in section 4.3.1.4.1. The Steese SRMA would include the same lands as in Alternative B, C, and D, but would be divided into 9 RMZs. Recreation settings would range from Primitive (3,000 acres) to Frontcountry. This alternative allows for increased development of visitor facilities, landscape modifications, and

group size as compared to Alternative B, but less than A, C, and D. Alternative E would provide more protection to fish and aquatic habitat than Alternatives A, C, and D, but less than A, based on the amount of potential disturbance. Impacts to fish and aquatic habitat are expected to be minor.

Effects from Travel Management

This Alternative proposes interim management similar to Alternative A until travel management plans can be completed. Alternative E is the only Alternative that would allow airboats and hovercraft within the Steese National Conservation Area. Those types of transportation would likely occur on Birch Creek, but are not likely to adversely impact fish and aquatic resources. This alternative also removes winter OHV restrictions in the RNAs which is prohibited in all other alternatives. Winter OHV use in the RNAs would not effect fish and aquatic resources. Impacts to fish and aquatic habitat would be minimized with the protection of the OHV monitoring plan, which closes or restricts areas open to OHV use if resource damage such as erosion, sedimentation, and water pollution occurs. This Alternative would potentially provide more protection to fish and aquatic habitat than Alternative A, but less than B, C, or D.

Effects from Special Designations

Impacts would be the same as described in Alternative C. Alternative E and C provide less protection to fish and aquatic resources than Alternative B and more protection than Alternative A and D.

4.5.1.3. Invasive Species Steese Subunit

Summary of Effects

Primary uses in the Steese Subunit that will impact non-native invasive species (invasive species) management are mineral development, recreation, and travel management. Outreach and education would be used to prevent the introduction and spread of invasive plants. Early Detection and Rapid Response (EDRR) and inventory and monitoring would further halt the introduction and spread of invasive species.

Non-native invasive plants (invasive plants) are the focus of invasive species management in this analysis. Invasive plants can thrive in marginal habitats, such as compacted and dry soils and those contaminated by road treatments, such as seeding for bank stabilization. Invasive plants can outcompete native vegetation and become established at disturbed sites and some, such as white sweetclover (*Melilotus officinalis* formerly *M. alba*) and orange hawkweed (*Hieracium aurantiacum*), can move into adjacent undisturbed sites (AKNHP, Gronquist 2008, Villano 2007).

4.5.1.3.1. Effects Common to All Alternatives

In addition to those effects listed as common to all subunits in section 4.3.1.5, the following effects would occur in the Steese Subunit.

Effects from Forest and Woodland Products

Management decisions for forest and woodland products vary widely over the four alternatives. Alternative A best protects against introduction and spread of invasive species from impacts of forest and woodland management, as no commercial use is permitted. Alternative D, which allows commercial harvest everywhere except the Birch Creek WSR Corridor and the RNAs,

would have the greatest potential impact. Timber within the subunit is not considered marketable for saw timber due to the remote location of stands of suitable trees and few if any, proposals for commercial timber harvest would be expected over the life of the plan. Future demands for biomass could include some limited harvesting or salvage for materials as communities venture farther from villages for biomass resources. Impacts from commercial uses on invasive plant, animal and pathogen management would be expected to be negligible because mitigation measures would be stipulations of permitted activities.

Timber salvage would be allowed throughout the subunit in Alternatives C-E. Demand for salvage sales has been lacking and would be expected to be low, having negligible impacts on invasive plant management. Proposals for commercial or salvage sales would be analyzed at the project level and include stipulations to prevent introduction and spread of invasive plants.

Demand for personal use is normally from adjacent communities and has been low in the past. Demand is not expected to increase greatly over the life of the plan. Impacts on invasive species management from personal use would be negligible.

Demand for commercial forest products can be fairly high, primarily for mushrooms after wildland fires. Otherwise, there has been little to no interest in commercial products in the past, and demand is not expected to increase significantly in the future. Impacts from commercial forest products would be evaluated at the proposal level and be mitigated through stipulations to the permits and through educating applicants on prevention practices.

Effects from Lands and Realty

Most lands and realty actions result in ground disturbance, which increases the potential for invasive species to become established. Vehicles and equipment used for construction and maintenance in rights-of-way or site development can import invasive species to the disturbed area. The potential for introduction and spread of invasive species from these actions would be expected to be significant. Impacts would be mitigated to the extent possible through permit stipulations and education and outreach efforts directed at applicants.

Rights-of way are continuous and provide pathways for spread of invasive plants along the linear disturbances and along trails, rivers or streams that they cross. Many invasive plant seeds are readily dispersed by water. Infestations of species such as white sweetclover (*Melilotus officinalis*, formerly *M. alba*) have been documented as monocultures out competing native willows on sand bars along Interior Alaska rivers spreading from source populations originating far upstream along roads (Spellman 2008, Conn et al. 2008).

Effects from Solid Leasable Minerals

Although a portion of the subunit is open to solid leasable minerals in each alternative, no impacts are expected to occur to invasive plant management from exploration or development of coal fields or other solid leasable minerals in the Steese Subunit. A decision on coal leasing is deferred and there is no potential for any other solid leasable minerals in the subunit.

Effects from Recreation

Management of recreation areas through recreation setting character (RSC) classes largely set the stage for the level of protection or development afforded an area. The size and location of RMZs, and therefore RSC settings, change with each alternative and are reflected in the decisions

for travel management and related activities. Impacts to invasive species are discussed in this section under these other resource uses.

Travel Management

Travel would be managed in the Steese Subunit under interim prescriptions until a Comprehensive Travel Management Plan is completed. Interim alternatives for travel management in the subunit include a range of limits on OHV gross vehicle weight restrictions, permit requirements, designated trails and cross-country summer use. Limitations on OHV use, particularly limiting use to designated trails, would help reduce the area of potential introduction of invasive plants and aid EDRR efforts by concentrating use and reducing disturbance to native vegetation. Permitting use would provide opportunities to educated users on the threats to habitats from invasive plants and prevention measures they can take (use and site-specific mitigation).

In all alternatives, non-motorized forms of transportation would be allowed and aircraft use would be allowed in all but Primitive RMZs. Motorized boat use would be allowed on portions of the Birch Creek WSR in some alternatives. These forms of transportation could contribute significantly to the introduction and spread of invasive plants, animal and pathogen pests. Boats and other watercraft are transported to public lands from locations around the continent. They harbor invasive species that may become dislodged and establish on susceptible public lands. Small aircraft can spread invasive species from urban airstrips to remote strips, gravel bars and benches. Outreach and education to these user groups will be the most effective method to reduce impacts caused by these uses.

In Primitive RMZs, all other OHV require a permit or approved Plan of Operations and no aircraft would be allowed. Travel management prescriptions for the undesignated recreation areas and all other RMZs besides Primitive would allow cross-country winter use of snowmobiles 1,500 curb weight and less. Summer use varies by alternative and RMZ. The size of the affected area varies based on boundaries of the RMZs. Impacts to invasive species from travel management prescriptions are discussed further under the alternatives below.

4.5.1.3.2. Alternative A (No Action)

Effects from Lands and Realty

Under Alternative A, acquisition of state lands within the Steese National Conservation Area would simplify land status and benefit management of invasive species. No adverse impacts to invasive species would be expected from land exchanges.

Four transportation corridors are identified in the Steese National Conservation Area in Alternative A (Map 19). All rights-of-way would be located within these corridors as much as possible. The potential for introduction and spread of invasive plants could be reduced as a result. To date, only one development has been made in designated transportation corridors. No potential applications for rights-of-way have been identified in the reasonably foreseeable future. Should rights-of-way be requested, mitigation to prevent the introduction and spread of invasive plants from development and maintenance would be incorporated in permit stipulations.

Effects from Fluid Leasable Minerals

All BLM lands are withdrawn from fluid leasable minerals and there are no existing leases. No impacts would occur under Alternative A.

Effects from Locatable Minerals

Under Alternative A, mining activity is limited to valid existing claims (10,000 acres). Impacts to invasive plants would continue to occur at the current levels. Mining results in removal of vegetation and overburden and the potential for introduction and spread of invasive plants from these actions would be expected to be significant. Mining operations would be analyzed at the project level and stipulations include reclamation and other practices to reduce introduction and spread of invasive plants.

Suction dredge operations could occur in the Steese Subunit under Alternative A. The reasonably foreseeable development scenario for the subunit assumes that one operation might occur under this alternative. Assuming it would be a Notice level operation, there would be an opportunity to develop mitigation to protect degradation of stream banks and prevent introduction of invasive species to the area of the operation.

Effects from Salable Minerals

Disposal of salable minerals would be allowed on all BLM lands in the Steese Subunit and authorized at the project level. Material sites, including gravel pits, are often infested with invasive plants and substantial seed banks are harbored in the materials. Invasive plants are spread to new areas with the contaminated materials. Vehicles and equipment brought into the sites may also be contaminated with invasive plant seed. Gravel and other materials are generally mined from areas near the project and materials from these sites are likely to be used for road and highway maintenance along the Steese Highway and other gravel roads in the area. Material sites within the area would be inspected for invasive plants and seed and treated as possible before being transported to project sites. Impacts to invasive plants from material sales would be mitigated as practicable through permit stipulations, and outreach and education. Demand for mineral materials from BLM lands is not expected to vary by alternative because materials are available and more accessible on state land.

Effects from Travel Management

Under this alternative, most BLM-managed lands would be open to winter OHV use 1,500 GVWR and under. Where no summer use would be allowed, use would be by designated trail, or for OHV greater than 1,500 GVWR a permit would be required. For vehicles greater than 1,500 GVWR off valid rights-of-way, a permit would be allowed but only for access to inholdings or with an authorized Plan of Operations. The Primitive RMZs, except the two RNAs, would be generally open to winter cross-country use by snowmobile, but closed to summer motorized access off valid rights-of-way without a permit.

Where permits would be required, stipulations would be applied to reduce introduction and spread of invasive species. EDRR, outreach and education, and larger scale control efforts would be used to try to mitigate impacts from permitted and unpermitted activities.

4.5.1.3.3. Alternative B

Effects from Lands and Realty

Acquisition of state inholdings within the Steese National Conservation Area, consolidation of scattered parcels around Circle, and disposal or exchange of lands identified for disposal

will simplify land status and benefit management of invasive species. No adverse impacts are expected from these actions.

Two transportation corridors are identified in Alternative B. The Steese ACEC, Mount Prindle RNA, and Birch Creek WSR Corridor would be right-of-way avoidance areas, except within transportation corridors. Consolidating rights-of-way within fewer designated corridors would further help prevent introduction and spread of nonnative invasive plants by reducing the overall disturbance. Monitoring for invasive plants and EDRR efforts would also be aided by concentration of rights-of-way into the fewer corridors.

Effects from Fluid Leasable Minerals

Under Alternative B, eight percent of BLM lands in the Steese Subunit would be open to fluid leasable minerals. No lease sales are anticipated. If an area were nominated for a lease sale, the effects would be analyzed as a new NEPA document. Seismic exploration could occur on high potential oil and gas lands near Circle (Map 87). The level of exploration would not vary by alternative. Geophysical exploration would require removal of trees in 14-foot wide straight line transects over an area of 10 to 20 miles. The removal of canopy cover from the area could create favorable conditions for invasive plants to become established. Exploration would be conducted during winter when designated snow cover and frost depth would protect vegetation and soils from disturbance. Impacts to invasive species under these conditions would be minimal and to the extent possible, further mitigated through the authorization process.

Effects from Locatable Minerals

Under Alternative B, eight percent of BLM lands would be open to new locatable mineral entry. Although some low mineral potential lands would be opened to mineral entry, impacts from both new claims and valid existing claims would be expected to be the same as Alternative A. Mining operations would be analyzed and stipulations would include reclamation and other best management practices to reduce introduction and spread of invasive plants. Monitoring and EDRR efforts by the BLM would further reduce the potential for invasive plants to become established.

Suction dredging operations are expected to be at the same level and impacts as described for Alternative A.

Effects from Salable Minerals

Under Alternative B, nine percent of BLM lands would be available for material site sales and exposed to potential infestations. Operations would be analyzed on a project basis and stipulations would include reclamation and other best management practices to reduce the potential for introduction and spread of invasive plants. Little additional demand for salable minerals is expected because materials are more accessible on state land. Potential for impacts to invasive species would be the lowest under this alternative.

Effects from Travel Management

Under Alternative B the size of the Primitive RMZ (1,033,000 acres) would be substantially larger than areas with similar management in Alternative A (3,000 acres). Primitive RMZs would be closed to the use of all motorized OHV and to aircraft. Travel management prescriptions in the undesignated recreation areas and Semi-Primitive and Backcountry RMZs would be limited to cross-country winter use of snowmobiles, 1,500 pounds curb weight and less. Use of any other OHV would require a permit or approved Plan of Operations. Using designated

trails reduces disturbance from pioneering of trails, which protects against pathways for new infestations. EDRR would be enhanced by concentration of OHV on trails. Where permits would be required, stipulations to reduce the threat of introductions would mitigate potential. Other active management, including outreach and education at potential entry points could be used to mitigate impacts.

4.5.1.3.4. Alternative C

Effects from Lands and Realty

Effects from land tenure changes and transportation corridors would be the same as Alternative B.

Alternative C differs from Alternative B in that no right-of-way avoidance areas would be designated. Impacts to invasive species, particularly plants, would increase and could be significant if multiple rights-of-way were developed, increasing the area of disturbance and the potential for invasive plants to establish and spread along the routes. Realty actions, such as rights-of-way, would be considered at the project level and include stipulations to manage impacts to invasive plants.

Effects from Fluid Leasable Minerals

Under Alternative C, twenty percent of BLM lands within the Steese National Conservation Area would be open to fluid leasable minerals, as described in Table 2.17. About 42,000 acres of BLM-managed lands outside the National Conservation Area would also be open. Although a larger area would be open in Alternative C than in Alternative B, impacts from seismic exploration would be the same.

Effects from Locatable Minerals

Twenty percent of BLM-managed lands within the Steese National Conservation Area and about 42,000 acres outside the National Conservation Area would be open to locatable minerals under Alternative C. The mineral potential is high for most of the open areas. Demand for locatable minerals is expected to be high. Invasive plants are well suited to pioneering on disturbances created by mining, which result in removal of all vegetation and overburden. Also, equipment brought to sites from outside the area could transport invasive plant seed. Impacts from mining on invasive plant management would be significant. Mining operations would be analyzed on project-specific basis and stipulations would include reclamation and other best management practices to reduce introduction and spread of invasive species. Monitoring and EDRR efforts would further reduce the potential for invasive plants to become established.

The RFD scenario predicts that nine suction dredge operations could occur in the subunit over the life of the plan. Disturbance to the stream banks, particularly those from long-term camps associated with a suction dredge operation, would impact about 1.8 acres and result in disturbed areas, which provides an opportunity for invasive plants to become established. Operations would be analyzed at the Notice level and should allow for developing stipulations to prevent introduction of invasive plants.

Effects from Salable Minerals

Under Alternative C, ninety-five percent of BLM lands would be available for material site sales and exposed for potential infestations. Stipulations on mining operations would include

reclamation and other best management practices to reduce the potential for introduction and spread of invasive species. Little additional demand for salable minerals is expected because materials are more accessible on state land. Effects would be similar to Alternative A.

Effects from Travel Management

Alternative C differs from Alternative B in the location and size of the RMZs and that off-route travel for game retrieval is allowed in the undesignated recreation area and all but Semi-Primitive and Backcountry RMZs. Cross-country winter use of snowmobiles to 1,500 curb weight and less would be allowed on ninety-nine percent of the area. Primitive RMZs (3,000 acres) are closed to motorized use. Summer use of OHV 1,500 curb weight and less would be limited to existing trails in the undesignated recreation area and Middlecountry and Frontcountry RMZs, except for retrieval of game, which is allowed off trail. OHV 10,000 pounds and less curb weight would be allowed on existing roads only. A permit or approved Plan of Operations would be required for all other use.

The potential for introduction and spread of invasive plants would increase substantially in this alternative compared to Alternative B. Off-route travel for game retrieval would be concentrated during seasons when many of the weeds of concern will be in seed. Many of the OHV will come from outside the area, increasing the likelihood of introducing species that do not occur in the area. EDRR, outreach and education, and larger scale control efforts would be used to try to mitigate impacts.

4.5.1.3.5. Alternative D

Effects from Lands and Realty

Effects from changes to land tenure are the same as Alternative B.

Alternative D differs from other alternatives in that there are no designated transportation corridors or right-of-way avoidance areas. Impacts would be greatest under this alternative. Management and ecological costs of invasive plants would be high, as more area would be available for potential right-of-way development. Development would result in areas striped of native vegetation, creating favorable sites for invasive plants to become established. Rights-of-way would also create linear pathways from developed areas, potentially infested with invasive plants, through relatively intact portions of the Steese National Conservation Area. Impacts of construction and maintenance could be minimized through permit stipulations. Monitoring and EDRR efforts would require more resources and time than the other alternatives.

Effects from Fluid Leasable Minerals

Under Alternative D, fifty-four percent of BLM lands would be open to all leasable minerals. Although a larger area would be open, impacts from seismic exploration would be the same as Alternative B.

Effects from Locatable Minerals

Approximately fifty-four percent of BLM lands in the subunit would be open to locatable minerals under Alternative D. The mineral potential is medium to high for most of the open areas (Maps 36 and 88). Demand for locatable minerals is expected to be high. Impacts to invasive plants under Alternative D would be the same as Alternative C, but the effects would be greatest under this alternative.

The RFD scenario predicts that 12 suction dredge operations could occur in the subunit over the life of the plan. Disturbance to the stream banks, particularly those from long-term camps associated with a suction dredge operation, would impact about 2.4 acres and result in disturbed areas, which can provide a seedbed for invasive plants to become established. Operations would be analyzed at the Notice level and should allow for developing stipulations to prevent introduction of invasive plants.

Effects from Salable Minerals

Impacts on invasive species would be the same as Alternative A.

Effects from Travel Management

This alternative differs from Alternatives B and C in the location and size of the RMZs and that cross-country summer use of OHV 1,500 curb weight and under would be allowed in the undesignated recreation areas and Middlecountry and Frontcountry RMZs (485,000 acres). Alternative D would have high potential for the introduction and spread of invasive plants from travel management prescriptions. Cross-country summer travel would occur across the seed maturation period of all weeds of concern. Many of the OHV will come from outside the area, increasing the likelihood of introduction of species that do not already occur in the subunit. EDRR, outreach and education, and larger scale control efforts would be used to try to mitigate impacts

4.5.1.3.6. Alternative E (Proposed RMP)

Major differences between Alternative C (Draft RMP Preferred Alternative) and Alternative E (Proposed RMP) include adopting decisions from Alternative B for Riparian Conservation Areas that would increase protection for streams, closing the Steese National Conservation Area and RCAs to locatable and leasable minerals, and adopting interim management while travel management plans are developed within five years of signing the Record of Decision. Effects on invasive species of other decisions for Alternative E would be the same as discussed under common to all.

Land tenure and land use authorizations would be the same as Alternative C.

All of the Steese National Conservation Area and the ten RCAs would be closed to leasable and locatable minerals. Impacts would be the same as Alternative A.

Effects from Travel Management

Interim Travel Management for Alternative E would be the same as for Alternative A (No Action) except a 1,000 pound curb weight limitation on snowmobiles and summer OHV would be implemented, airboats and hovercraft would be allowed within the Steese National Conservation Area, and snowmobiles will be allowed in the RNAs. Within five years of signing the Record of Decision a travel management plan would be completed. The plan could vary substantially from the interim management and at that time analysis of impacts from snowmobiles in the RNAs and airboats and hovercraft could result in limits on these uses.

A 1,000 pound curb weight and 50 inches width limitation on snowmobiles would replace the 1,500 pound GVWR limitation, and a 1,000 pound curb weight and 50 inches width limitation on ATVs would replace the 1,500 pound GVWR limitation. In Alternative A and E 142,000 acres, including Birch Creek WSR, would be limited to no summer use. Interim management in

Alternative E differs from Alternative C in that RMZs open to summer OHV would not be limited to designated trails and the area open to cross-country use would be almost twice the area open in Alternative C to designated trails. Impacts from cross-country use by all users would be expected to increase as described in the assumptions for analysis as population trends are projected to increase and ATV technology continues to advance. User pioneered trails would be more likely to occur where cross-country OHV use would be allowed. User pioneered trails cause degradation of soils and vegetation, resulting in rutting, erosion and reduced water quality and disturbed areas for invasive plants to become established. The potential for the introduction of invasive plants would be significantly greater with cross-country use of OHV. The costs to monitor the area and control invasive plant infestations would be prohibitive for effective management of invasive species.

The prohibition on airboats and hovercraft in the non-navigable segments of Birch Creek WSR would be removed. The Steese National Conservation Area and Birch Creek WSR have been closed to hovercraft and airboats since the signing of the Steese RMP in 1986. No use of hovercraft and airboats in these designated areas prior to that has been documented; however, it is estimated that this type of use would increase over the life of the RMP. An assumption for analysis of this method of access is that ≤ 20 percent of users would engage in use of airboats and hovercraft. Recreation use would increase over the life of the plan and closures on use of airboats for harvest or transport of moose in other areas, such as Minto Flats, could result in displacement of hunters into the Steese National Conservation Area under Alternative E, which would substantially increase the risk of introduction of invasive species into Birch Creek WSR. Impacts would be expected to be significant over the life of the plan if this use would continue through the Travel Management Plan. Invasive species management would be costly and likely ineffective because the area of impact is large.

4.5.1.3.7. Cumulative Effects

Cumulative impacts would be similar among the alternatives, but vary in extent of effect. In general, Alternative B would contribute least to cumulative effects, because management prescriptions would be more conservative. Alternative D would contribute the most to cumulative effects because the most ground disturbing activities would be allowed. Alternative C would provide a balance of management of invasive species while providing for multiple uses of BLM-managed lands. Alternative A would be similar to Alternative E, except that transportation corridors would be maintained and the area would be closed to locatable and leasable minerals. Locatable and leasable minerals would be open on about 2 percent of BLM-managed lands in Alternative E.

Demand for recreational use would be anticipated to increase over the life of the plan as populations in the state increase and as technological advancements in recreation equipment continue to occur. Placer mining would be occurring on both valid federal mining claims and state mining claims in the Steese Subunit. Levels of placer mining would increase on BLM-managed lands as additional lands would be opened to mineral entry through Alternatives B, C, and D of this plan. Mining on state and private lands would be anticipated to increase, largely dependent on prices of gold.

4.5.1.4. Soil and Water Resources Steese Subunit

Summary of Effects

A variety of resources, resource uses, or programs outlined in the action alternatives protect soil and water resources; including proposed RCAs to protect soil and water resources, ACECs, WSRs, RMZs, the SRMA, and restrictions on OHV travel. Varying adverse impacts to soil and water resources would likely result from surface disturbance associated with locatable minerals development, recreation development, and increased OHV travel.

Generally, the potential for direct adverse impacts from mineral development increases sequentially from Alternative A to Alternatives B and E, Alternative C, and Alternative D. Appropriate stipulations and SOPs for soil and water resources would be implemented to ensure that long-term adverse impacts would be minimized or avoided.

Additional impacts beyond those discussed under section 4.3.1.6 Soil and Water Resources, are discussed in the following sections.

4.5.1.4.1. Alternative A (No Action)

Effects of Land and Realty Actions

Four transportation corridors are established in the Steese National Conservation Area, two of which cross the Birch Creek WSR. These four corridors provide access to existing and potential mining areas. The construction of new trails or roads within these corridors would adversely impact soil and water resources through increased erosion and siltation of streams. Impacts to soil and water resources would be reduced through site-specific analysis of subsequent authorizations.

Effects of Locatable Minerals

Under Alternative A, the Steese Subunit (1,267,000 acres) is withdrawn from new locatable mineral entry. However, valid federal claims exist on 5,000 acres, with mining occurring on some of these claims. Anticipated locatable minerals activity includes one suction dredge operation, seven small-scale placer mines, and two large-scale placer mines. An estimated 300 to 400 acres of ground would be disturbed, with much of the disturbed areas having been previously worked by recent or historic mining operations (since placer mining has occurred throughout much of the Steese since the late 1800s).

Disturbance to soil resources and potential impacts to water quality from a particular mining operation would be reduced through site-specific analysis of subsequent authorizations.

Effects of Recreation

Under Alternative A, the Steese National Conservation Area would be managed as a SRMA. Facility enhancements, such as roads, toilets, boat ramps, and parking areas, may be added to accommodate increasing recreation demand. These enhancements would likely have limited impacts on soil or water resources.

All lands outside of the SRMA would be managed as other BLM lands; management would be custodial and result in fewer facility enhancements (such as trails or interpretive panels). Recreation user activities outside the SRMA may result in greater disturbance of soils or impacts to water quality because of limited oversight.

Effects of Travel Management

The Mount Prindle and Big Windy RNAs, and the Pinnell Mountain Trail would be closed to both winter and summer OHV use. The Primitive Management Unit and the Birch Creek WSR Corridor (142,000 acres) would be open to cross-country winter use of snowmobiles, but closed to summer OHV use. All remaining lands would be open (Map 48) to cross-country motorized travel (year-round) by vehicles with a GVWR of 1,500 pounds and less.

Alternative A would provide the most opportunity for motorized public access of any of the alternatives. Eighty-eight percent of the subunit is subject only to weight restrictions, and the remaining twelve percent is either closed or limited by season of use. This alternative provides the greatest opportunity for those seeking cross-country motorized activities, but would likely result in increased detrimental impacts to soil and water resources from proliferation of user-created trails and subsequent erosion.

4.5.1.4.2. Alternative B

Effects of Land and Realty Actions

Two transportation corridors would be retained under Alternative B. In these corridors, concentrated use would likely impact soil resources and potentially water resources, but would limit disturbance to a discrete area. Impacts to soil and water resources would be reduced through SOPs and site-specific analysis of subsequent authorizations. The Steese ACEC, the RNAs, and the Birch Creek WSR Corridor (except in the identified transportation corridor) would be identified as right-of-way avoidance areas, and as such would provide protection for soil and water resources.

Areas closed to locatable mineral entry would provide added protection for soil and water resources in the Steese SRMA by restricting surface disturbance activities associated with mineral development.

Effects of Locatable Minerals

Under Alternative B, 1,233,000 acres would be closed and 34,000 acres would be open to locatable mineral entry (Map 32). The potential impacts to soil and water resources would increase compared to Alternative A, because new areas would be opened to mining activities and additional access routes would likely be constructed.

The number and type of placer mining operations that are estimated to occur under this alternative include one suction dredge, eight small-scale placer mines, and two large-scale mines. Actual impacts to soil and water resources from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. Placer mine operations have the potential to adversely impact soil resources and water quality through erosion of soils and fine-grain sediments and subsequent increased downstream turbidity in nearby streams. Mining operations could impact the natural flow characteristics of selected river segments. Disturbance to soil and water resources from a particular mining operation would be reduced through SOPs and site-specific analysis of subsequent authorizations.

Effects of Recreation

Under Alternative B, the Steese SRMA (1,246,000 acres), would be managed for the Primitive experiences of non-motorized use, minimal facilities development for resource protection, and small user groups. These settings would provide additional protection for soil and water resources.

Effects on BLM-managed lands outside the SRMA would be similar to Alternative A in that recreation user activities may result in greater disturbance of soils or impacts to water quality because of limited oversight. General impacts to soil and water resources from recreation management activities are described under Effects Common to All Subunits.

Effects of Travel Management

Alternative B would place significantly more limits on use of OHVs than Alternative A. Under Alternative B, 3,000 acres of research natural areas, would be closed to all OHV use including snowmobiles. An estimated 1,032,000 acres would be designated as Primitive RMZ with a Limited OHV designation, which allows for winter snowmobile use. OHV use would be limited to OHVs with a curb weight of 1,000 pounds or less. Snowmobile use both on and off trails in the winter would have little effect on soil and water resources.

Alternative B would allow federally qualified subsistence hunters to use OHVs within the Birch Creek WSR corridor. The use of wheeled and/or tracked vehicles within the corridor may result in adverse impacts to soil and water resources in the form of erosion and sedimentation from user-created trails and stream bank instability where new stream crossings were created. It is anticipated that an additional 300 miles of user-created travel routes would be developed in the Steese Subunit over the life of the plan impacting up to 900 acres.

A travel management plan for the Steese Subunit would be completed after approval of the RMP. Measures to reduce impacts to soil and water resources include limitations on OHV use (weight and seasonal closures). Where permits may be authorized for OHV use, stipulations may be included to protect soil and water resources.

4.5.1.4.3. Alternative C

Effects of Land and Realty Actions

Effects to soil and water resources would be similar to Alternative B; two transportation corridors would be retained. However, there would be no right-of-way avoidance areas under Alternative C.

Effects of Locatable Minerals

Under Alternative C, 274,000 acres would be open to locatable minerals. Potential for placer gold is high for portions of the lands that would be opened and new development would likely occur in some areas. Projected locatable mineral development under Alternative C includes nine suction dredge operations, 15 small-scale placer mines, and four large-scale mines. Impacts would be similar to Alternative B, except they would potentially affect more acres and require additional access.

Actual impacts to soil and water resources from the extraction of locatable minerals would vary depending on the methods used, the size of operation, and the number of mines. Since more acres would be open to mineral development under Alternative C than Alternative B, there would be greater potential for adverse impacts to soil and water resources under Alternative C. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects of Recreation

Alternative C would allocate much fewer acres to Primitive RMZs and more acres to Semi-Primitive, Backcountry, Middlecountry, and Frontcountry RMZs compared to Alternative B. Middlecountry and Frontcountry Zones provide less protection to soil and water resources than do Primitive, Semi-Primitive, and Backcountry Zones. Alternative C allows for increased development of visitor facilities, landscape modifications, and larger group size. Hence, Alternative C provides less protection of soil and water resources compared to Alternative B, but more protection than Alternatives A and D.

Effects on other BLM-managed lands would be similar to Alternative A.

Effects of Travel Management

Under Alternative C, effects to soil and water resources would be similar to Alternative B, but somewhat greater. Three thousand acres would be designated as Primitive RMZs, closed to all OHV use. Precluding summer use of OHVs in much of the of the subunit (50) and limiting OHVs to existing trails on would reduce effects compared to Alternative A.

4.5.1.4.4. Alternative D

Effects of Land and Realty Actions

Land and realty actions under Alternative D would provide the least amount of protection for soil and water resources because more lands would be open to potential ground disturbing activities such as mining and road construction. There would be no transportation corridors or right-of-way avoidance areas.

Effects of Locatable Minerals

Of all the alternatives, Alternative D would open the most acres to locatable minerals, 682,000 acres. Approximately 585,000 acres would be closed. Placer gold potential is high for portions of the lands that would be opened and new development would likely occur in some areas. Projected locatable mineral development under Alternative D includes 12 suction dredge operations, 24 small-scale placer mines, and four large-scale mines.

Actual impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. Since more acres would be open to mineral development under Alternative D than Alternative C, there would be greater potential for adverse impacts to soil and water resources. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects of Recreation

Alternative D would allocate slightly fewer acres to Backcountry RMZs, and more to Middlecountry compared to Alternative C. Middlecountry Zones provide less protection to soil and water resources than Backcountry Zones. However, there would be an increased potential for adverse effects to soil resources under Alternative D relative to Alternatives B, C and E because there would be more emphasis on recreational infrastructure development, to encourage and enhance recreational opportunities.

Effects of Travel Management

Effects would be similar to Alternative C. Three thousand acres in research natural areas would be designated as Primitive RMZs, closed to all OHV use including snowmobiles. Cross-country use of OHVs with a curb weight of 1,000 pounds or less would be allowed year round in portions of the subunit (Map 51). Similar to Alternatives B and C, a travel management plan would be completed after approval of the RMP.

With more cross-country summer OHV use and increased visitation, Alternative D would have more potential for adverse impacts to soil and water resources. Mitigation could include trail maintenance, seasonal travel restrictions and OHV weight restrictions to reduce the amount of disturbance to soils and water. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

4.5.1.4.5. Alternative E (Proposed RMP)

Alternative E is intended to provide a mix of land management actions that best satisfies issues and concerns in consideration of all values and programs and adopts a blend of actions that would balance moderate development with protection of the environment.

Effects of Land and Realty Actions

Same as Alternative C.

Effects of Locatable Minerals

Under Alternative E about 1.24 million acres would be closed to locatable minerals, thereby protecting soil and water resources. Closed areas include the Steese National Conservation Area, Birch Creek WSR corridor, and riparian conservation areas. These closed areas would protect soil and water resources by not allowing surface-disturbing activities associated with mineral development.

About 30,000 acres would be open to locatable minerals with the projected level of mining activity similar to Alternative B. Two large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from both operations would impact 120 to 160 acres over the life of this plan. Up to eight small-scale placer mine operations are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of about 4.4 acres over the life of the mine for a total of 20 to 30 acres of disturbance. Impacts from all eight operations would impact 160 to 240 acres over the life of this plan.

Mineral exploration activities with resulting camps and field sampling programs would impact between 6 to 156 acres annually. Reclamation would generally occur annually. Up to three exploration operations may occur over the life of this plan.

Impacts from suction dredging would be similar to Alternatives A and B with a camp footprint of less than one acre. For suction dredge operations the disturbance of materials occurs underwater and bed materials are generally redistributed each spring during break-up or high water events. Impacts from camps associated with suction dredging are anticipated to be less than 1 acre annually over the life of the plan. Impacts from the various types of mining operations are described under section 4.3.1.6.

Based on the amount of potential surface disturbance, Alternative E would have more potential adverse impacts to soil and water resources than Alternative A, similar impacts to Alternative B, and fewer impacts than Alternatives C and D. Impacts would be reduced through application of SOPs and site-specific analysis of subsequent authorizations.

Effects from Recreation

A wide range of recreational opportunities would be available under Alternative E. The Steese SRMA and lands outside the SRMA are the same as in Alternatives B, C, D, and E. In Alternative E, the SRMA would be divided into nine RMZs, each with a well-defined “setting character,” ranging from Primitive, Semi-Primitive, Backcountry, Middlecountry, and Frontcountry. Relative to the amount of land placed within each of these five categories, Alternative E would be between Alternatives B and C, with B having more acres of Primitive land and less acres in Semi-Primitive and Backcountry. The recreation management objectives associated with each of these settings include differing emphases on building and maintaining facilities, establishing and maintaining trails, and in the range of summer and winter OHV uses.

Compared to Alternative B, Alternative E allows for increased development of visitor facilities, landscape modifications, and group size. Alternative E would provide more protection to soil and water resources than Alternatives A, C, and D, but less than B, based on the amount of potential disturbance.

Effects of Travel Management

A travel management plan would be developed for the Steese Subunit after approval of the RMP. Until that time, interim management would be the largely that same as Alternative A, with a few exceptions, including opening 3,000 acres in the RNAs to winter snowmachine use, and the allowance of airboats and hovercraft on both navigable and non-navigable sections of the rivers, including the Birch Creek WSR. These new exceptions to current management practices would not directly affect soil and water resources. Under Alternative E, open cross-country travel on BLM lands would be restricted year round to motorized vehicles with a 1,000 pounds curb weight or less and 50 inches or less in width which would help reduce the amount of OHV surface disturbance to vegetation and soils and subsequent erosion and sedimentation impacts. Alternative E would potentially provide more protection to soil and water resources than Alternative A, but less than B, C, or D.

4.5.1.5. Visual Resources Steese Subunit

Summary of Effects

VRM Classes outline the level of change that could occur within that class. Identifying an area as a specific management class does not guarantee that change will take place. The discussion below identifies the number of acres that may retain or lose visual quality due to management in a specific VRM Class; however, the potential for every acre to lose visual quality due to management in a specific VRM Class is extremely low. The analysis logically assumes that areas designated as VRM Class III and IV objectives would permit more surface-disturbing impacts and potentially have greater adverse impacts on visual resources and scenic quality than those areas designated as VRM Class I and II objectives.

In addition to impacts discussed as common to all subunits in section 4.3.1.9, the following impacts may occur in the Steese Subunit. For the visual resource inventory see Appendix D, *Visual Resource Inventory*.

Alternatives — VRM Management Class Designations		VISUAL RESOURCES INVENTORY CLASS DESIGNATION							
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV	
		69,000	%	1,153,000	%	25,000	%	34,000	%
Alternative A*	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	69,000	69,000	6	425	<1	118	<1	68	<1
VRM II	76,000			76,000	6				
VRM III	1,066,000	477	<1	1,056,000	83	8,000	<1	1,000	<1
VRM IV	0								
Total	1,211,000	69,000	6	1,132,000	94	8,000	<1	1,000	<1
*Only the Steese National Conservation Area and Birch Creek WSR have assigned VRM Classes in Alternative A.									
Alternative B	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	107,000	73,000	6	21,000	2	12,000	1		
VRM II	1,139,000			1,130,000	87	8,000	1	1,000	<1
VRM III									
VRM IV	46,000			2,000	<1			44,000	3
Total	1,292,000	73,000	6	1,153,000	89	20,000	1	45,000	3
Alternative C	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	103,000	73,000	6	17,000	1	13,000	1		
VRM II	578,000			569,000	44	8,000	1	1,000	<1
VRM III									
VRM IV	612,000			568,000	44			44,000	3
Total	1,292,000	73,000	6	1,153,000	90	20,000	2	45,000	4
Alternative D	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	90,000	73,000	6	5,000	<1	12,000	1		
VRM II	423,000			423,000	33				
VRM III									
VRM IV	779,000			725,000	56	8,000	1	45,000	4
Total	1,292,000	73,000	6	1,153,000	89	20,000	2	45,000	4
Alternative E	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I	103,000	69,000	5	17,000	1	17,000	1		
VRM II	910,000	14	<1	900,000	70	8,000	1	1,000	<1
VRM III									
VRM IV	270,000	7	<1	236,000	18			34,000	3
Total	1,282,000	69,000	5	1,154,000	90	25,000	2	35,000	3

4.5.1.5.1. Common to All Alternatives

Cave and Karst

Management of significant caves according to federal laws and to prevent resource degradation would help maintain visual resources under all alternatives. The known cave and karst resource is located in Wolf Creek RMZ which would be managed for a Semi-Primitive to Backcountry recreation setting to preserve naturalness. These actions will help protect visual resources by maintaining the area in near natural landscape.

Effects from Wildlife

If OHV travel impacts wintering caribou by reducing use of an area, then use restrictions or closures may occur. These actions would improve visual resources by restricting or eliminating

damaged to vegetation and clearing of winter trails. Changes in vegetation and clearing winter trails and travel routes from OHV use would impact visual resources by primarily changing the line, color and texture of the natural landscape. Additional discussion of impacts may be found in section 4.3.1.9 Impacts Common to All Subunits.

In all Action Alternatives, management efforts to limit density of development in the caribou migration corridor would help protect visual resources.

Effects from Travel Management

Impacts on visual resources from existing airstrips and unrestricted landings include minor changes, primarily in color and texture, on the landscape. Repeated use results in soil exposure and creates a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. The removal of rocks and debris that interfere with landing aircraft may create a contrast in texture characteristics from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a cleared soil area.

4.5.1.5.2. Alternative A (No Action)

Under continuation of current management, visual resources outside the Steese National Conservation Area and Birch Creek WSR Corridor would be managed based on the visual inventory class and the visual contrast rating process on a project-specific basis. Visual resource management classes have been established for lands within the Steese National Conservation Area and Birch Creek WSR Corridor.

Effects from Fish and Aquatic Species

Management activities to protect fish habitat along tributaries of Birch Creek including South Fork and its tributaries, Clums Fork, Sheep Creek and Harrington Fork, will generally help protect visual resources by restricting surface-disturbing activities on these waterways.

Effects from Visual Resources

Under Alternative A, of VRI Class I acres (six percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character. These lands, the Birch Creek WSR Corridor, have an A rating for scenic quality, both high and medium sensitivity, and occur in the foreground-middle ground zone.

Of VRI Class II lands (ninety-three percent), less than one percent would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Approximately six percent of VRI Class II land would be managed as VRM Class II allowing a low level of change, while eighty-seven percent would be managed as VRM Class III, potentially resulting in only partial retention of landscape characteristics. These lands have an A rating for scenic quality, a high sensitivity, and occur in all three zones.

Of VRI Class III lands (less than one percent), less than one percent would be managed as VRM Class I resulting in preservation of the existing visual character of these lands, which are associated with the Birch Creek WSR Corridor. The remaining less than one percent would be managed as VRM Class III potentially resulting in only partial retention of the characteristic landscape. These lands have a C rating for scenic quality, a high sensitivity, and occur in the occur in foreground-middle ground zones.

Less than one percent of VRI Class IV lands (less than one percent) will be managed as VRM Class I resulting in the preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Less than one percent of VRI Class IV lands will be managed as VRM Class III allowing for partial retention of the landscape characteristics. These lands have a C rating for scenic quality, both high and medium sensitivity, and occur in the occur in the Foreground-Middleground and Background zones. All of these lands are associated with both the Steese National Conservation Area and Birch Creek WSR Corridor.

Effects from Wildlife Management

Management activities for wildlife and wildlife habitat generally include restrictions on other resource use such as closing areas to mining, seasonal closures or the use of prescribed fire. Closing areas to certain surface-disturbing activities would improve visual resources by not allowing those activities. Seasonal closures may protect visual resources for the duration of the closures. Impacts from prescribed fire are addressed under Effects from Wildland Fire Ecology and Management in section 4.3.1.9. Impacts Common to All Subunits. Impacts from prescribed fire would last the longest. The size and scope would depend on the size of the closures and prescribed fire area.

Effects from Forest and Woodland Products

Under Alternative A, no commercial timber harvest is permitted within the subunit. This would protect visual resources by not allowing commercial harvest of timber to occur on 1,275,000 acres. Personal use of timber is allowed throughout the subunit. Management restrictions may include winter cutting and movement, maintaining a set distance from waterways, and lopping and scattering slash. These management restrictions would help reduce impacts to visual resources. The size and scope of impacts would depend on the size of the area and the harvest techniques used.

Effects from Lands and Realty

The four transportation corridors in the Steese National Conservation Area, encompassing 45,000 acres, allow for the concentration of access roads and possibly provide a location for other rights-of-way such as pipelines, transmission lines and associated facilities. This consolidation of rights-of-way would help protect visual resources by limiting the locations of surface disturbance and facilities development associated with these activities. If alternative rights-of-ways are necessary, the use of existing trails or travel routes would be used whenever possible. Using existing trails would reduce impacts to visual resources by using already disturbed areas.

Effects from Leasable Minerals

The entire subunit, 1,275,000 acres is closed to fluid and solid leasable minerals. Visual resources will not be impacted by the exploration or development of leasable minerals on these lands.

Effects from Locatable Minerals

The entire subunit is closed to locatable minerals through a variety of withdrawals, subject to valid existing rights. These withdrawals protect visual resources from new mining operations on 1,275,000 acres. Visual resources would only be impacted by mining on existing claims (7,000 acres). These impacts would be present in varying degree depending on the number and size of active mining operations and the degree of reclamation on existing disturbed areas. See section

4.3.1.9 Impacts Common to All Subunits for impacts to visual resources from locatable mineral activities on valid existing claims.

Under Alternative A, two large-scale placer mine operations are anticipated. The operations would have an annual footprint of 16 acres of disturbance over the 10 to 20 year life of the mine for a total of 60 to 80 acres of disturbance. Both operations would impact between 120 to 160 acres over the life of the plan. Up to seven small-scale placer mine operations are anticipated. Each with a disturbed annual footprint of 4.4 acres over the 10 to 20 year life of the mine for a total of 20 to 30 acres of disturbance. All three operations would impact 140 to 210 acres over the life of this plan. One suction dredge operation is anticipated to occur in this subunit annually. The operation would have a camp with a footprint of less than one acre annually. In suction dredging, the movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events.

The preference for winter cross-country moves associated with mining activities helps protect visual resources by reducing the amount of disturbance to soils and vegetation because the ground is frozen and vegetation is at least partly covered by snow. Some changes to line, form, color and texture still occurs through clearing the route of large woody vegetation in a relatively straight line on an otherwise irregular, multi-hued landscape.

Effects from Salable Minerals

The entire subunit (1,275,000 acres) would be open to salable minerals. Impacts from the mining of salable minerals are described under section 4.3.1.9. Impacts to visual resources would depend on the scale of the action and the number of mineral sites mined. While the entire subunit is open to salable minerals, it is anticipated that demand for material will be met from production on state lands and no new federal material sites are anticipated. Mining activities for salable minerals would generally occur along roads due to transportation requirements.

Effects from Recreation

Development within the Birch Creek WSR Corridor and adjacent viewshed has been minimal with the only development being at Upper and Lower Birch Creek Waysides as access points to the river. One winter trail traverses alongside upper Birch Creek within the corridor running down the river from approximately river mile 97. The corridor is maintained to retain the existing primitive character of the landscape and to meet VRM Class I objectives. Some human-made features, such as trapping cabins and inholdings, are located within the corridor. Many of these facilities were built using natural appearing materials and blend with the surrounding landscape in color. These management activities help protect the visual resources on 69,000 acres in Birch Creek WSR Corridor.

The Primitive Management Unit is managed to protect the wild and natural character of the area. Facilities such as non-motorized trails and public shelter cabins were constructed of natural appearing materials and blend with the surrounding landscape. These management activities help protect the visual resources on 64,000 acres.

The three Semi-Primitive Motorized Management Units have a number of human-made facilities, such as trails, roads, and facilities related to current or past mining and trapping activities. These facilities were constructed as sustainable and to blend with the surrounding landscape characteristics, thus protecting visual resources on 1,075,000 acres.

Research Natural Areas may be impacted by camping and by the development of trails and travel routes within the boundary of the RNAs. These impacts will be small but may impact the landscape features of the RNAs especially line, color and texture.

Effects from Travel Management

Under Alternative A, the Research Natural Areas and the Primitive Management Unit are closed to OHV use. This helps protect visual resources by preventing surface disturbance to vegetation and soils from the use of motorized vehicles, on 67,000 acres. Trails and user-created travel routes will impact line, color and texture over a relatively small area (67,000 acres).

Management in the Birch Creek WSR Corridor allows motorized use of OHV weighing 1,500 pounds GVWR and less without permit for winter travel. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. These management activities help protect the visual resources on 69,000 acres.

The Semi-Primitive Motorized Management Units all allow for unrestricted travel by OHVs weighing 1,500 pounds GVWR and less year round. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. These management activities help protect the visual resources on 1,075,000 acres. However, allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes with impacts to vegetation and soils in line, color and texture. It is anticipated that over the life of the plan, 300 miles of additional user-created travel routes may be developed. While the total area of impact is very small, only approximately 872 acres, the sensitivity to the natural landscape is relatively high in the areas likely to be impacted. Typically, user-created summer travel routes are more visible than winter travel routes that tend to be positioned near valley bottoms and are protected by snow and frozen ground. Summer travel routes are typically developed in areas that show changes to line, texture and color with repeated passes.

The use of motorized vehicles greater than 1,500 pounds GVWR within the Steese National Conservation Area and Birch Creek WSR off a valid right-of-way may be allowed by permit. Impacts would vary depending on the size of vehicle, season of travel, and the number of passes made but, would be similar to impacts described for open cross-country travel in section 4.3.1.9.

Travel on lands outside the Steese National Conservation Area and Birch Creek WSR is unrestricted and may impact visual resources primarily by disturbing vegetation by repeated passes and by clearing travel routes. Unrestricted travel impacts 45,000 acres.

Effects from Special Designations

Under all alternatives, the Birch Creek WSR Corridor is managed to preserve the river and its immediate environment in its natural, primitive condition, in accordance with the Wild and Scenic Rivers Act (P.L. 90542). The designated corridor (69,000 acres) is managed as a VRM Class I area.

Under all alternatives, two areas have been designated as Research Natural Areas (RNAs) where no surface-disturbing activities are allowed except by permit in association with research projects.

These areas are closed to OHV, and mineral location and leasing. These management activities will help protect visual resources by limiting surface-disturbing activities in association with permits issued for research projects on 3,000 acres

4.5.1.5.3. Alternative B

In general, Alternative B anticipates the lowest level of resource development and adopts VRM classes that would be the most restrictive to development.

Effects from Fish and Aquatic Species

Under Alternative B, three watersheds have been identified as High Priority Restoration Watersheds and would be emphasized for restoration and/or protection. They are North Fork Birch Creek, Harrison Creek and Twelvemile Creek. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on approximately 21,000 acres.

Of VRI Class I lands within High Priority Restoration Watersheds (2,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands within High Priority Restoration Watersheds, four percent or 913 acres would be managed as Class I, ninety-five percent or 19,000 acres would be managed as Class II lands while one percent (187 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

There are 21 Riparian Conservation Areas (RCAs) identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 561,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands in RCAs (67,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands in RCAs, two percent or 7,000 acres would be managed as Class I while ninety-eight percent or 463,000 acres would be managed as Class II lands. Of VRI Class III lands in RCAs (8,000 acres) one-hundred percent would be managed as Class I lands. Of VRI Class IV lands in RCAs one-hundred percent (16,000 acres) would be managed as Class IV lands.

Effects from Visual Resources

Under Alternative B, of VRI Class I 73,000 acres (six percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of these lands. These lands are the Birch Creek WSR Corridor and have an A rating for scenic quality, have both high and medium sensitivity, and occur in the foreground-middle ground zone.

Of VRI Class II lands (eighty-nine percent or 1,153,000 acres), two percent or 21,000 acres would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Approximately eighty-seven percent of VRI Class II lands (1,130,000 acres) would be managed as VRM Class II allowing a low level of change. Less than one percent (2,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have an A rating for scenic quality, a high sensitivity, and occur in all three zones.

Of VRI Class III lands (two percent or 20,000 acres), less than one percent (12,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands which are associated with the Birch Creek WSR Corridor. Less than one percent (8,000 acres) would be managed as VRM Class II allowing a low level of change to the landscape. These lands have a C rating for scenic quality, a high sensitivity, and occur in the occur in foreground-middle ground zone.

Of VRI Class IV lands (four percent or 45,000 acres) less than one percent (1,000 acres) would be managed as VRM Class II resulting in the preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. While three percent or 44,000 acres would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have a C rating for scenic quality, have both high and medium sensitivity, and occur in the occur in the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to maintain wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining the natural vegetation and landform. Under Alternative B wilderness characteristics will be maintained on 1,199,000 acres, limiting activities that impact the appearance of naturalness.

Of VRI Class I lands where wilderness characteristics will be maintained (57,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands where wilderness characteristics will be maintained, two percent or 19,000 acres would be managed as Class I while ninety-two percent or 1,114,000 acres would be managed as Class II lands. Of VRI Class III lands where wilderness characteristics will be maintained (8,000 acres) one-hundred percent would be managed as Class II lands resulting in the preservation of the existing visual character of these lands. Of VRI Class IV lands where wilderness characteristics will be maintained one-hundred percent (1,000 acres) would be managed as Class II lands resulting in the preservation of the existing visual character of these lands.

Effects from Forest and Woodland Products

Under Alternative B, personal use of timber, timber salvage sales, commercial timber sales, and commercial use of forest products would not be allowed within the Steese SRMA (inclusive of Birch Creek WSR). Temporary camps and various impacts from different harvest techniques would not impact 1,245,000 acres. These management actions would help protect visual resources. The rest of the subunit would be open to all these types of use, potentially impacting visual resources on 45,000 acres. The size and scope of impacts would depend on the size of the area and harvest techniques used.

Effects from Land and Realty

The two transportation corridors in the Steese National Conservation Area, encompassing 52,000 acres, would continue to concentrate the building of access roads and possibly provide a location for other rights-of-way such as pipelines, transmission lines and associated facilities. This consolidation of rights-of-way would help protect visual resources by limiting the locations of surface disturbance and facilities development. Impacts of rights-of-way are described in section 4.3.1.9 Impacts Common to All Subunits.

Of VRI Class I lands, one-hundred percent (8,000 acres) would be managed as Class I lands. Of VRI Class II lands one-hundred percent (44,000 acres) would be managed as Class II lands. No lands were identified as VRI Class I or III lands.

The designation of Mount Prindle and Big Windy RNAs, the Steese ACEC, and the Birch Creek WSR Corridor as right-of-way avoidance areas, except where the transportation corridor overlaps, would protect visual resources by generally not allowing clearance of vegetation and construction of structures associated with different kinds of rights-of-ways on 90,000 acres. A natural landscape in line, form, color and texture would be maintained in these areas.

Effects from Fluid Leasable Minerals

Under Alternative B, 1,231,000 acres would be closed to fluid leasable minerals, including the Steese SRMA (inclusive of Birch Creek WSR Corridor), the Central Administrative Site, and all disposal lands. Approximately 42,000 acres of split-estate and lands near Circle would be open to fluid mineral leasing subject to no surface occupancy. These actions would protect visual resources.

Approximately 45,000 acres would be open to seismic exploration, resulting in impacts from those activities, such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture. It is assumed that 130 to 212 miles of seismic line would be shot in the Yukon Flats Basin every five years. Of this, less than 20 miles would be located on BLM lands. No development of fluid minerals is anticipated over the life of the plan. Impacts to visual resources from seismic exploration are described more fully in section 4.3.1.9.

Of VRI Class II lands, ninety-three percent (849 acres) would be managed as Class I lands with major constraints while seven percent (64 acres) would be managed as Class IV with major constraints allowing a visible level of change to the landscape. Of VRI Class IV lands one-hundred percent (44,000 acres) would be managed as Class IV lands with major constraints with 3,000 acres with no constraints. No lands were identified as VRI Class I or III lands.

Effects from Solid Leasable Minerals

The areas described above as closed to fluid leasable minerals would also be closed to solid leasable minerals. These actions would protect visual resources. Approximately 45,000 acres would be open to solid leasable minerals. However, no exploration or development of solid leasable minerals is anticipated during the life of the plan. If activity did occur, potential impacts are described in section 4.3.1.9.

Effects from Locatable Minerals

Under Alternative B, 1,231,000 acres would be closed to locatable minerals, including the Steese SRMA (inclusive of Birch Creek WSR Corridor), subject to valid existing rights. Visual resources would only be impacted by mining on 5,000 acres of valid existing claims within the closed areas.

These impacts would be present in varying degrees depending on the number and size of active mining operations and the degree of reclamation on existing disturbed areas.

Remaining lands in the subunit, 45,000 acres, would be open to new locatable mineral entry. The level of mining activity is expected to increase slightly compared to Alternative A. Two large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from both operations would impact 120 to 160 acres over the life of this plan. Up to eight small-scale placer mine operations, one more than in Alternative A, are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine for a total of 20 to 30 acres of disturbance. Impacts from all eight operations would impact 160 to 240 acres over the life of this plan.

Of VRI Class II lands, one-hundred percent (64 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands one-hundred percent (44,000 acres) would be managed as Class IV lands. No lands were identified as VRI Class I or III lands.

Impacts from suction dredging would be the same as Alternative A. Impacts from the various types of mining operations are described under section 4.3.1.9.

Effects from Salable Minerals

Under Alternative B, the Steese SRMA (including all of the Steese National Conservation Area), 1,231,000 acres, would be closed to salable minerals. Visual resources would not be impacted by mining of salable minerals on these lands. Impacts to visual resources by exploration, development and production of salable mineral resources on the remaining 45,000 acres would depend on the scale of the action and the number of mineral sites mined. Impacts from the development of salable minerals are described under section 4.3.1.9.

While 45,000 acres would be open to salable minerals, it is anticipated that demand for material will be met from production on state lands and no new federal material sites are anticipated within the subunit. Mining activities for salable minerals would generally occur along roads due to transportation requirements and BLM lands adjacent to roads are very limited.

Effects from Recreation

Recreation Management Zones (RMZs) are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions include a range of Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape. Impacts from recreation management activities are described under section 4.3.1.9 Impacts Common to All Subunits.

Of VRI Class I lands, one-hundred percent (73,000 acres) would be retained under Class I management. Of VRI Class II lands two percent or 21,000 acres would be managed as Class I lands, while eighty-seven percent (1,130,000 acres) would be managed as Class II lands and less than one percent (2,000 acres) would be managed as Class IV lands. Of VRI Class III lands, less than one percent (12,000 acres) would be managed as Class I lands while less than one percent

(8000) acres would be managed as Class II lands. Of VRI Class IV lands less than one percent (1,000 acres) would be managed as Class II lands with the remaining 46,000 acres managed as Class IV.

Under Alternative B, specially designated areas (Big Windy and Mount Prindle RNAs and Birch Creek WSR Corridor) would have a VRM Class I (107,000 acres). The Pinnell Mountain, Preacher Creek, Wolf Creek and Harrison RMZs would have a VRM Class II (1,139,000 acres). All other lands would have a VRM Class IV (46,000 acres).

Effects from Travel Management

Travel management outside the SRMA

Cross-country winter travel on 45,000 acres outside the SRMA is restricted to snowmobiles weighing 1,000 pounds curb weight and less and with a width of 50 inches or less and may impact visual resources by disturbing primarily vegetation by repeated passes and by clearing of travel routes.

All other vehicle use may be allowed by permit. Impacts would vary depending on the size of vehicle, season of travel, and the number of passes made but, would be similar to impacts described for open cross-country travel in section 4.3.1.9. Impacts Common to All Subunits.

Travel management within the SRMA

Research Natural Areas would be closed to OHV use except by permit (Map 49), helping to protect visual resources by preventing surface disturbance to vegetation and soils on 3,000 acres. However winter use by federally Qualifies Subsistence Users may result in impacts to the visual landscape characteristics of vegetation. The remainder of the Primitive RMZ would be closed to summer OHV use, but open to winter use of snowmobiles with a curb weight of 1,000 pounds or less and a width of 50 inches or less which may impact visual resources by disturbing vegetation.

The **Semi-Primitive and Backcountry Zones** (211,000 acres), which include the Birch Creek and Harrison RMZs, allow cross-country motorized use of OHVs weighing 1,000 pounds curb weight and less and a width of 50 inches or less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation.

In all zones, vehicles that exceeded the OHV restrictions may be allowed by permit. Impacts from vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made but, would be similar to impacts described for cross-country travel in section 4.3.1.9. These actions help protect visual resources by preventing surface disturbance to vegetation and soils on 1,035,000 acres.

Effects from Special Designations

Under Alternative B, 924,000 acres would be designated as the Steese ACEC to protect Fortymile caribou and Dall sheep habitat. The ACEC would be closed to leasable, locatable, and salable minerals, subject to valid existing rights. Management decisions to protect wildlife habitat helps to preserve the visual characteristics of the area. Seasonal restrictions for a one mile radius around ungulate mineral licks will limit development and use, protecting visual resources in these areas. Seasonal restrictions or closures of areas to motorized use may occur to protect habitat within the

ACEC. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape. The Steese ACEC would be a right-of-way avoidance area, protecting visual resources by not allowing clearance of vegetation and construction of structures associated with different kinds of rights-of-ways. These actions would protect visual resources on 927,000 acres.

Land use permits and leases would be considered subject to constraints for ungulate mineral licks. The size and scope of impacts would depend on the size of the requested use and techniques used. Impacts to visual resources from rights-of-way and travel activities are described in section 4.3.1.9.

Same as Alternative A, two designated RNAs would continue with no surface-disturbing activities are allowed except by permit in association with research projects. The areas would remain closed to OHV use, camping, and mineral location and leasing. These management actions will help protect visual resources by limiting surface-disturbing activities on 3,000 acres. Development of non-motorized travel routes within the RNAs would impact visual resources on 3,000 acres. Impacts from travel routes are similar to impacts from trail construction described in section 4.3.1.9. Impacts from scientific activities are described in the same section, under Effects from Cultural Resources.

Under Alternative B, approximately 4,500 acres associated with Big Windy Creek would be maintained as a natural landscape under the eligibility as a “wild” river and would be assigned a VRM Class I to protect the naturalness of the river corridor. “Wild” rivers are essentially primitive and undeveloped. Management decisions to preserve these characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform on a scale of development from “wild” to “recreational.”

Of VRI Class I lands within Special Designations, one-hundred percent or 47,000 acres would be retained under Class I management. Of VRI Class II lands within Special Designations, two percent (19,000 acres) would be managed as Class I lands while ninety-seven percent (858,000 acres) would be managed as Class II and less than one percent (30 acres) would be managed as Class IV allowing a visible level of change to the landscape. No lands within Special Designations were identified as VRI Class III or VI lands.

4.5.1.5.4. Alternative C

In general, this alternative anticipates a moderate level of resource protection, use and enhancement of resources and adopts VRM classes that would allow a range of development and still protect visual resource in certain areas.

Effects from Fish and Aquatic Species

Same as Alternative B, three watersheds have been identified as High Priority Restoration Watersheds and would be emphasized for restoration and/or protection. They are North Fork Birch Creek, Harrison Creek and Twelvemile Creek. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on approximately 21,000 acres.

Of VRI Class I lands (2,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, less than one percent or 33 acres would be managed as

Class I, five percent or 889,000 acres would be managed as Class II lands while ninety-five percent (19,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

There are 18 RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 445,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands (65,000 acres) one-hundred percent would be retained under class I management. Of VRI Class II lands, four percent or 13,000 acres would be managed as Class I while thirty-nine percent or 138,000 acres would be managed as Class II lands and fifty-seven percent (205,000 acres) would be managed as Class V allowing a visible level of change to the landscape. Of VRI Class III lands (8,000 acres) one-hundred percent would be managed as Class I lands. Of VRI Class IV lands one-hundred percent (16,000 acres) would be managed as Class IV lands.

Effects from Visual Resources

Under Alternative C, of VRI Class I acres (73,000 acres, six percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of these lands. These lands, the Birch Creek WSR Corridor, have an A rating for scenic quality, have both high and medium sensitivity, and occur in the foreground-middle ground zone.

Of VRI Class II lands (eighty-nine percent), approximately one percent (17,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of lands associated with the Birch Creek WSR Corridor. Approximately forty-four percent of VRI Class II land (569,000 acres) would be managed as VRM Class II allowing a low level of change. Approximately forty-four percent would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have an A rating for scenic quality, a high sensitivity, and occur in all three zones. The majority of visual impacts would result from mineral development. No lands would be managed as Class III.

Of VRI Class III lands (two percent), less than one percent (12,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character. These lands are associated with the Birch Creek WSR Corridor. Less than one percent (8,000 acres) would be managed as VRM Class II allowing a low level of change to the landscape. These lands have a C rating for scenic quality, a high sensitivity, and occur in the occur in foreground-middle ground zone.

Less than one percent of VRI Class IV lands (four percent) will be managed as VRM Class II (1,000 acres) resulting in the preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. While three percent would be managed as VRM Class IV (44,000 acres) potentially resulting in a high level of change to the landscape characteristics. These lands have a C rating for scenic quality, have both high and medium sensitivity, and occur in the occur in the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative C, wilderness characteristics would be maintained on 647,000 acres, limiting activities that impact the appearance of naturalness.

Of VRI Class I lands being maintained for Wilderness Characteristics (57,000 acres) one-hundred percent would be managed as Class I retaining the natural appearance of the landscape. Of VRI Class II lands being maintained for Wilderness Characteristics, three percent or 15,000 acres would be managed as Class I while ninety-seven percent (565,000 acres) would be managed as Class II lands. Of VRI Class III lands being maintained for Wilderness Characteristics, one-hundred percent or 8,000 acres would be managed as Class II lands. Of VRI Class IV lands being maintained for Wilderness Characteristics, one-hundred percent (1,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Forest and Woodland Products

Personal use of timber, commercial timber sales, and commercial use of forest products would not be allowed within the Birch Creek WSR Corridor and the RNAs. Temporary camps and various impacts from different harvest techniques would not impact 72,000 acres. These management actions would help protect visual resources. The rest of the subunit, 1,000,000 acres would be open to all these uses, allowing the potential for impacts to visual resources. The size and scope of impacts would depend on the size of the area and harvest techniques used. Additionally, commercial timber sales are unlikely under any alternative, due to lack of access and lack of valuable timber.

Timber salvage sales would be considered throughout the subunit. The size and scope of impacts would depend on the size of the area and harvest techniques used. Temporary camps and various impacts from different harvest techniques could occur in localized areas within the 1,275,000 acres open to salvage sales. Impacts are discussed in section 4.3.1.9 Impacts Common to All Subunits.

Effects from Land and Realty

The two transportation corridors in the Steese National Conservation Area, encompassing 52,000 acres, would continue to concentrate the building of access roads and possibly provide a location for other rights-of-way such as pipelines, transmission lines and associated facilities. This consolidation of rights-of-way would help protect visual resources by limiting the locations of surface disturbance and facilities development. Impacts of rights-of-way are described in section 4.3.1.9 Impacts Common to All Subunits.

Of VRI Class I lands, one-hundred percent (8,000 acres) would be managed as Class I lands. Of VRI Class II lands fourteen percent (6,000 acres) would be managed as Class II lands while eighty-six percent or 38,000 acres would be managed as Class IV allowing a visible level of change to the landscape. No lands were identified as VRI Class III or IV lands.

Effects from Fluid Leasable Minerals

Under Alternative C, 992,000 would be closed to fluid leasable minerals, protecting visual resources in these areas (Map 35). Closed areas include the Birch Creek WSR Corridor, RNAs, and approximately sixty-five percent of the Steese National Conservation Area.

Approximately 214,000 acres in Preacher Creek and Clums RMZs, and lands around Circle would be open to fluid mineral leasing subject to minor constraints (e.g., seasonal closures). Additionally, 71,000 acres would be open. Open areas include portions of Harrison RMZ and split-estate land and would be subject to standard stipulations.

Lands open to leasing would also be open to exploration resulting in impacts from those activities, such as green trails and the removal of vegetation in straight lines causing changes to color, line and texture. Effects from seismic exploration would be the same as Alternative B.

No lands open for leasable minerals were identified as VRI Class I or III lands. Of VRI Class II lands, one-hundred percent or 241,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 44,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Under Alternative C, the areas described as closed to fluid leasable minerals would also be closed to solid leasable minerals. These actions would protect visual resources. Approximately 500,000 acres would be open to solid leasable minerals. However, no exploration or development of solid leasable minerals is anticipated during the life of the plan. If activity did occur, the impacts that could potentially occur in open areas are described in section 4.3.1.9.

Effects from Locatable Minerals

Under Alternative C, 992,000 acres would be closed to locatable minerals, protecting visual resources in these areas (Map 34). Closed areas include the Birch Creek WSR Corridor, the RNAs, Harrison Creek reclamation area (3,500 acres), and approximately sixty-five percent of the Steese National Conservation Area. This action would protect visual resources by not allowing surface-disturbing activities associated with mineral development.

All the remaining lands in the subunit (285,000 acres) would be open to locatable minerals. Levels of mining activity would increase substantially compared to Alternatives A and B. Four large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the 10 to 20 year life of the mine for a total of 60 to 80 acres of disturbance. All four operations would impact 240 to 320 acres over the life of this plan. Up to 18 small-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 4.4 acres over the 10 to 20 year life of the mine for a total of 20 to 30 acres of disturbance. All 18 operations would impact between 360 to 540 acres (less than one percent of the subunit) over the life of this plan.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between six to 104 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to two exploration operations may occur over the life of this plan.

Impacts from suction dredging would be similar to Alternative A, but would affect a larger area as up to nine suction dredge operations are anticipated annually under Alternative C. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and

is generally redistributed each spring during break-up or high water events. Impacts from camps are anticipated to be less than nine acres annually. Impacts from the various types of mining operations are described in section 4.3.1.9.

No lands open for locatable minerals were identified as VRI Class I or III lands. Of VRI Class II lands, one-hundred percent or 241,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 44,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Under Alternative C, the Birch Creek WSR Corridor (69,000 acres) would be closed to salable minerals thus there would be no impact on these lands.

Impacts to visual resources by production of salable mineral resources on the remaining 1,207,000 acres would depend on the scale of the action and the number of mineral sites mined. While ninety-five percent of the subunit is open to salable minerals it is anticipated that demand for material will generally be met from production on state lands and no new federal material sites are anticipated. Impacts to visual resources by the development of salable minerals are described under section 4.3.1.9.

Effects from Recreation

Recreation Management Zones (RMZs) are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (73,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands, less than one percent or 17,000 acres would be managed as Class I, forty-four percent or 569,000 acres would be managed as Class II lands while forty-four percent (568,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands (20,000 acres), less than one percent or 12,000 acres would be managed under Class I retaining the natural appearance of the landscape while less than one percent (8,000 acres) would be managed under Class II preserving the existing visual character of these lands. Of VRI Class IV lands (45,000 acres), less than one percent (1,000 acres) would be managed as Class II lands preserving the existing visual character of these lands. Approximately 44,000 acres or three percent would be managed as Class IV.

Under Alternative C, Big Windy and Mount Prindle RNAs and Birch Creek RMZ would have a VRM Class I (approximately 102,000 acres). Semi-Primitive Zones including Pinnell Mountain, Wolf Creek, Rocky Mountain, and Rock Creek RMZs would have a VRM Class II (587,000 acres). All other lands would have a VRM Class IV (611,000 acres).

Effects from Travel Management

Travel management outside the SRMA

Under Alternative C, summer travel by OHVs weighing 1,000 pounds curb weight and less with a width of 50 inches or less are allowed on existing routes only, except to retrieve legally harvested game. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened existing routes except for game retrieval. Multiple passes over the same travel route for the retrieval of game could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques, or mineral soil area. These management activities would help protect the visual resources on 45,000 acres.

Vehicles weighing less than 10,000 pounds curb weight but more than 1,000 pounds curb weight would be allowed on existing roads only. This would protect visual resources by restricting use of larger vehicles to already hardened areas. All other vehicle use may be allowed under permit. Impacts would vary depending on the size of vehicle, season of travel, and the number of passes made but, would be similar to impacts described for open cross-country travel and unrestricted aircraft landings in section 4.3.1.9.

Travel management within the SRMA

Under Alternative C, the **Primitive Zones** would be closed to OHV use except by permit. This helps protect visual resources by preventing surface disturbance to vegetation and soils from the use of motorized vehicles, on 3,000 acres. However winter use of OHVs weighing 1,000 pounds curb weight and less with a width of 50 inches or less by federally Qualifies Subsistence Users may result in impacts to the visual landscape characteristics of vegetation.

The **Semi-Primitive and Backcountry Zones** (578,000 acres), which include the Birch Creek, Pinnell Mountain, Wolf Creek, Rock Creek, and Rocky Mountain Uplands RMZs, allow cross-country motorized use of OHV weighing 1,000 pounds curb weight and less with a width of 50 inches or less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Impacts to visual resources in the **Middlecountry and Frontcountry Zones**, which include the Preacher Creek, Clums, and Harrison RMZs, would be similar to that described above for *Travel management outside the SRMA*. Cross-country winter travel with motorized vehicles of 1,000 pounds curb weight and less with a width of 50 inches or less would be allowed and may impact visual resources by disturbing vegetation by repeated passes and by clearing of travel routes as described in section 4.3.1.9. Impacts from cross-country winter travel may occur on 566,000 acres.

Summer travel with OHVs weighing 1,000 pounds curb weight and less with a width of 50 inches or less is allowed on existing routes only, except to retrieve legally harvested game. This helps reduce the amount of surface disturbance as described above under *Travel management outside the SRMA*. Vehicles weighing less than 10,000 pounds curb weight but greater than 1,000 pounds curb weight would be allowed on existing roads only, protecting visual resources by restricting use to already hardened areas. These management actions would help protect the visual resources on 566,000 acres.

In all zones, the use of vehicles exceeding the OHV restrictions may be allowed by permit. The impacts from vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. Impacts from these uses would be similar to those described for open cross-country travel in section 4.3.1.9.

Effects from Special Designations

Under Alternative C, 457,000 acres would be designated as the Steese ACEC to protect caribou and Dall sheep habitat. Effects would be the same as Alternative B, except the ACEC would be smaller. Management decisions to protect wildlife habitat helps to preserve the visual characteristics of the area. The ACEC will remain closed to leasable and locatable minerals, subject to valid existing rights. Seasonal restrictions for a one mile radius around ungulate mineral licks will limit development and use, protecting visual resources in these areas. Seasonal restrictions or closures of areas to motorized use may occur to protect habitat. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 457,000 acres.

Salable minerals, land use permits, and leases could be authorized in the ACEC subject to constraints for ungulate mineral licks, but are unlikely. The size and scope of impacts would depend on the size of the requested use and techniques used. Impacts to visual resources from travel and various land uses are described in section 4.3.1.9.

Same as Alternatives A and B, two designated RNAs would continue with no surface-disturbing activities allowed except by permit in association with research projects. The areas would remain closed to OHV and mineral location and leasing. These management activities would help protect visual resources by limiting surface-disturbing activities to those associated with permits issued for research projects on 3,000 acres.

Development of non-motorized trails within the RNAs would impact visual resources on 3,000 acres. Most trails would attract attention of the casual observer if viewed from a higher observation point and if the trails were located within the Foreground-Middleground and Background zones. Trails or routes that are properly designed and viewed from ground level, however, would not generally attract the attention of a casual observer, with the exception from trailhead observation points. Primitive camping would be allowed under this alternative. Visual Impacts from trail construction and temporary camps are described under Effects from Travel Management in section 4.3.1.9.

Of VRI Class II lands within Special Designations one percent or 3,000 acres would be managed as Class I, eighty-two percent or 377,000 acres would be managed as Class II lands while seventeen percent (80,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. No lands in Special Designations were identified as VRI Class I, III or IV lands.

Under Alternative C, Big Windy Creek would not be recommended as suitable for designation as a WSR, thus there would be no effects.

4.5.1.5.5. Alternative D

In general, this alternative anticipates the greatest amount of resource development and adopts the least restrictive VRM classes that would allow major development while protecting visual resources in certain areas.

Effects from Fish and Aquatic Species

Same as Alternative B, three watersheds have been identified as High Priority Restoration Watersheds and would be emphasized for restoration and/or protection. They are North Fork Birch Creek, Harrison Creek and Twelvemile Creek. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on approximately 21,000 acres.

Of VRI Class I lands within High Priority Restoration Watersheds (2,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands within High Priority Restoration Watersheds, less than one percent or 233 acres would be managed as Class I, five percent or 889 acres would be managed as Class II lands while ninety-five percent (19,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

There are eight RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 205,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands within High Priority Restoration Watersheds (65,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands, two percent or 2,000 acres would be managed as Class I while forty-four percent or 56,000 acres would be managed as Class II lands and fifty-four percent or 69,000 acres would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands (8,000 acres) one-hundred percent would be managed as Class I lands. Of VRI Class IV lands within High Priority Restoration Watersheds one-hundred percent (5,000 acres) would be managed as Class IV lands.

Effects from Visual Resources

Under Alternative D, of VRI Class I acres (six percent or 73,000 acres), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character. These lands, the Birch Creek WSR Corridor, have an A rating for scenic quality, have both high and medium sensitivity, and occur in the foreground-middle ground zone.

Of VRI Class II lands (eighty-nine percent or 1,153,000 acres), less than one percent (5,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Approximately thirty-two percent or 423,000 acres of VRI Class II land would be managed as VRM Class II allowing a low level of change, while fifty-six percent (725,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have an C rating for scenic quality, a high sensitivity, and occur in foreground-middle ground zone. The majority of visual impacts would result from mineral development.

Of VRI Class III lands (two percent or 20,000), less than one percent (12,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Less than one percent (8,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to the landscape.

These lands have a C rating for scenic quality, a high sensitivity, and occur in the occur in foreground-middle ground zone.

Approximately one-hundred percent of VRI Class IV lands (four percent or 45,000 acres) will be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have a C rating for scenic quality, have both high and medium sensitivity, and occur in the occur in the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative D, wilderness characteristics would be maintained on 483,000 acres, limiting activities that impact the appearance of naturalness.

Of VRI Class I lands where Wilderness Characteristics will be maintained (57,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands where Wilderness Characteristics will be maintained, one percent or 3,000 acres would be managed as Class I, ninety-nine percent or 423,000 acres would be managed as Class II lands. No lands where Wilderness Characteristics will be maintained were identified as VRI Class III or IV lands.

Effects from Forest and Woodland Products

Under Alternative D, commercial timber sales and commercial use of forest products would not be allowed within the Birch Creek WSR, and RNAs. Temporary camps and various impacts from different harvest techniques would not impact 72,000 acres. These management actions would help protect visual resources. The rest of the subunit would be open to these uses. The size and scope of impacts would depend on the size of the area and harvest techniques used. Temporary camps and various impacts from different harvest techniques could impact localized areas within the 1,191,000 acres open to these uses. As in Alternative C, commercial timber sales would be unlikely.

The entire subunit would be open to personal use timber and timber salvage sales, potentially impacting visual resources on 1,281,000 acres. The size and scope of impacts would depend on the size of the area and harvest techniques used.

Effects from Land and Realty

Under Alternative D, no transportation corridors would be identified, potentially resulting in increased impacts to visual resources.

Effects from Fluid Leasable Minerals

Under Alternative D, 583,000 would be closed to fluid leasable minerals, protecting visual resources in these areas (Map 37). Closed areas include the Birch Creek WSR Corridor, the RNAs, and approximately fifty percent of the Steese National Conservation Area.

Approximately 524,000 acres would be open to fluid mineral leasing subject to minor constraints such as seasonal closures. Minor constraints would protect visual resources by limiting surface disturbance activities associated with fluid minerals at least seasonally. An additional 169,000 acres would be open to exploration subject to standard stipulations. No development of fluid minerals is anticipated over the life of the plan. In open areas, impacts such as creation of green trails and the removal of vegetation in straight lines causing changes to color, line and texture, could occur. Exploration could occur in open areas. Although a larger area would be open, impacts from seismic exploration would be the same as Alternative B.

No lands open for leasable minerals were identified as VRI Class I lands. Of VRI Class II lands, one-hundred percent or 530,000 acres would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands one-hundred percent or 8,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands one-hundred percent (44,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Under Alternative D, the areas described as closed to fluid mineral leasing above, would also be closed to solid leasable minerals. These actions would protect visual resources. Approximately 693,000 acres would be open to solid mineral leasing, of this 524,000 acres would be subject to minor constraints such as seasonal closures. Minor constraints would protect visual resources by limiting surface disturbance activities at least seasonally. Although 693,000 acres would be open, no solid mineral exploration or leasing is anticipated during the life of the plan.

Effects from Locatable Minerals

Under Alternative D, 583,000 would be closed to locatable minerals, protecting visual resources in these areas (Map 36). Closed areas include the Birch Creek WSR Corridor, the RNAs, and approximately fifty-four percent of the Steese National Conservation Area. This would protect visual resources by not allowing surface-disturbing activities associated with mineral development. The reclaimed areas in Harrison Creek would not be closed. Increasing the potential for impacts to visual resources in this area.

Approximately 693,000 acres in the Harrison RMZ, Preacher Creek RMZ and portions of Clums RMZ within the National Conservation Area would be open to locatable minerals. The level of mining activity, particularly small-scale placer mines and suction dredging operations, would increase compared to Alternative C.

Four large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the 10 to 20 year life of the mine for a total of 60 to 80 acres of disturbance. All four operations would impact 240 to 320 acres over the life of this plan. Up to 24 small-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 4.4 acres over the 10 to 20 year life of the mine for a total of 20 to 30 acres of disturbance. All eighteen operations would impact 480 to 720 acres, less than one percent of the planning area, over the life of the plan.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between 6 to 156 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to three exploration operations may occur over the life of this plan.

Impacts from suction dredging would be similar to Alternatives A, B, and C but would affect a larger area. Approximately 12 suction dredge operations are anticipated annually, each with a camp footprint of less than one acre. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from camps associated with suction dredging are anticipated to be less than 12 acres annually over the life of the plan. Impacts from the various types of mining operations are described under section 4.3.1.9.

No lands open for locatable minerals were identified as VRI Class I. Of VRI Class II lands, one-hundred percent or 652,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, one-hundred percent or 8,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 45,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Same as Alternative A.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (73,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands, less than one percent or 5,000 acres would be managed as Class I, thirty-three percent or 423,000 acres would be managed as Class II lands while fifty-six percent (725,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands, less than one percent (12,000 acres) would be managed as Class I while less than one percent (8,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands, one-hundred percent or 45,000 acres would be managed as Class IV lands.

Under Alternative D, the RNAs and Birch Creek WSR Corridor (90,000 acres) would have a VRM Class I. The Semi-Primitive Pinnell Mountain RMZ would have a VRM Class II (16,000 acres). Wolf Creek and Rocky Mountain Uplands Backcountry RMZs would have a VRM Class II (407,000 acres). All other lands would have a VRM Class IV (779,000 acres).

Effects from Travel Management

Travel management outside the SRMA

Under Alternative D, open cross-country travel on BLM lands, outside of the Steese National Conservation Area and Birch Creek WSR Corridor, is restricted to motorized vehicles 1,000 pounds curb weight and less with a width of 50 inches or less year round, and may impact visual resources primarily by disturbing vegetation by repeated passes and by clearing of travel routes. Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads only, protecting visual resources by restricting use to already hardened areas. Weight restricted travel impacts 45,000 acres.

All other vehicle use may be allowed under permit. The impacts would vary depending on the size of vehicle, season of travel, and the number of passes made, but would be similar to impacts described for open cross-country travel in section 4.3.1.9.

Travel management within the SRMA

Impacts to visual resources from travel in the **Primitive Zones** (3,000 acres) would be the same as Alternative C.

The **Semi-Primitive and Backcountry Zones** (510,000 acres), which include the Birch Creek, Pinnell Mountain, Rocky Mountain Uplands, and Wolf Creek RMZs, allow winter cross-country motorized use of OHV weighing 1,000 pounds curb weight and less with a width of 50 inches or less without permit. All other vehicle use may be allowed under permit. These season of travel and weight restrictions help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

The **Middlecountry and Frontcountry Zones**, which include the Preacher Creek, Clums, and Harrison RMZs, allow for open cross-country travel, year round, with motorized vehicles 1,000 pounds curb weight or less. Cross-country travel impacts visual resources by disturbing vegetation by repeated passes and by clearing travel routes. Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads only. This would protect visual resources by restricting use to already hardened areas. These management actions impact 733,000 acres.

In all zones, other vehicle use may be allowed under permit. Impacts would vary depending on the size of vehicle, season of travel, and the number of passes made but, would be similar to impacts from cross-country travel described in section 4.3.1.9.

Effects from Special Designations

Under Alternative D, 193,000 acres would be designated as the Steese ACEC to protect caribou and Dall sheep habitat. Management decisions to protect wildlife habitat helps to preserve the visual characteristics of the area. The effects would be the same as Alternatives B and C but would apply to fewer acres because the ACEC is smaller. The ACEC will remain closed to leasable and locatable minerals, subject to valid existing rights. Seasonal restrictions for a one-half mile radius around ungulate mineral licks will limit development and use in these areas. Seasonal restrictions or closures of areas to motorized use may occur to protect habitat. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 193,000 acres.

Salable minerals, land use permits, and leases could be authorized subject to constraints for ungulate mineral licks, but would be unlikely. The size and scope of impacts would depend on

the size of the requested use and techniques used. Impacts to visual resources from travel and various land uses are described in section 4.3.1.9.

Of VRI Class II lands within Special Designations, sixty-four percent or 123,000 acres would be managed as Class II while thirty-six percent or 69,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape. No lands within Special Designations were identified as VRI Class I, III or IV lands.

Effects from RNAs and Wild and Scenic Rivers would be the same as Alternative C.

4.5.1.5.6. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs and adopts a blend of VRM classes that would allow major development while protecting visual resources in certain areas. It has the second highest percentage of VRM Class II lands of all Alternatives. Class II allows a low level of change to the characteristic landscape where management activities may be seen but not attract the attention of the casual observer.

Effects from Fish and Aquatic Species

Under Alternative E, four watersheds have been identified as High Priority Restoration Watersheds and would be emphasized for restoration and/or protection. They are North Fork Birch Creek, Harrison Creek, Twelvemile Creek and Volcano-Clums Fork. Active restoration projects, such as willow plantings, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape on approximately 54,000 acres.

Of VRI Class I lands within High Priority Restoration Watersheds (2,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands within High Priority Restoration Watersheds, less than one percent or 233 acres would be managed as Class I, five percent or 889 acres would be managed as Class II lands while ninety-five percent (19,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Same as Alternative B, there are twenty-one Riparian Conservation Areas identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 550,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands within Riparian Conservation Areas (69,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands within Riparian Conservation Areas, two percent or 16,000 acres would be managed as Class I while seventy percent or 900,000 acres would be managed as Class II lands and eighteen percent or 236,000 acres would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands within Riparian Conservation Areas one percent (17,000 acres) would be managed as Class I lands while less than one percent (8,000 acres) would be managed as Class II. Of VRI Class IV lands within Riparian Conservation Areas one-hundred percent (34,000 acres) would be managed as Class IV lands while less than one percent would be managed as Class II. .

Effects from Visual Resources

Under Alternative E, of VRI Class I acres (five percent or 69,000 acres), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of these lands. These lands, the Birch Creek WSR Corridor, have an A rating for scenic quality, have both high and medium sensitivity, and occur in the foreground-middle ground zone (same as Alternative C).

Of VRI Class II lands (ninety percent or 1,154,000 acres), one percent (17,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Approximately seventy percent or 900,000 acres of VRI Class II land would be managed as VRM Class II allowing a low level of change, while eighteen percent (236,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics. These lands have an C rating for scenic quality, a high sensitivity, and occur in foreground-middle ground zone. The majority of visual impacts would result from mineral development.

Of VRI Class III lands (two percent or 25,000), approximately one percent (17,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Birch Creek WSR Corridor. Less than one percent (8,000 acres) would be managed as VRM Class II allowing a low level of change.

Approximately three percent of VRI Class IV lands (three percent or 34,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to the landscape characteristics, while less than one percent (1,000 acres) would be managed as VRM Class II lands allowing a low level of change. These lands have a C rating for scenic quality, have both high and medium sensitivity, and occur in the occur in the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

In summary, 103,000 acres will be managed as VRM Class I, 910,000 acres will be managed as VRM Class II, and 270,000 acres will be managed as VRM Class IV. No lands will be managed as VRM Class III.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple. Wilderness characteristics would be maintained on 1,009,000 acres, by limiting activities that impact the appearance of naturalness.

Of VRI Class I lands managed to maintain Wilderness Characteristics (69,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands managed to maintain Wilderness Characteristics, 17,000 acres would be managed as Class I, while 897,000 acres would be managed as Class II lands. No lands managed to maintain wilderness characteristics were identified as VRI Class III or IV lands.

Effects from Forest and Woodland Products

Under Alternative E, personal use of timber and forest products as well as commercial timber salvage and commercial use of forest products would be considered on all BLM-managed lands (1,282,000 acres). Commercial timber sales (large or small) would be considered on BLM-managed lands except within the Birch Creek WSR Corridor, Big Windy and Mount Prindle RNAs, and crucial caribou and Dall sheep habitat (526,000 acres). These acres would be protected from impacts associated with commercial timber sales on 526,000 acres of BLM-managed lands. Impacts would depend on the location, size or the area and harvest techniques used, however, harvesting forest products would impact color, line and texture throughout the subunit by allowing the harvest of white and black spruce forests for firewood and house logs.

Effects from Land and Realty

Under Alternative E, no transportation corridors would be identified, potentially resulting in increased impacts to visual resources, same as Alternative D.

Effects from Fluid Leasable Minerals

Under Alternative E, 1,237,000 would be closed to fluid leasable minerals, protecting visual resources in these areas (Map 38). Closed areas include the Steese National Conservation Area, Birch Creek WSR Corridor, and riparian conservation areas.

Approximately 30,000 acres would be open to fluid mineral leasing subject to minor constraints such as seasonal closures. Minor constraints would protect visual resources by limiting surface disturbance activities associated with fluid minerals at least seasonally. No development of fluid minerals is anticipated over the life of the plan. In open areas, impacts such as creation of green trails and the removal of vegetation in straight lines causing changes to color, line and texture, could occur. Exploration could occur in open areas. Although a larger area would be open, impacts from seismic exploration would be the same as Alternative B.

No lands open for leasable minerals were identified as VRI Class I, II or III lands. Of VRI Class IV lands one-hundred percent (26,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Solid Leasable Minerals

Under Alternative E, the areas described as closed to fluid mineral leasing above, would also be closed to solid leasable minerals. These actions would protect visual resources. Approximately 30,000 acres would be open to solid mineral leasing. Although 30,000 acres would be open, no solid mineral exploration or leasing is anticipated during the life of the plan.

Effects from Locatable Minerals

Under Alternative E, 1,237,000 would be closed to locatable minerals, protecting visual resources in these areas (Map 38). Closed areas include the Steese National Conservation Area, Birch Creek WSR Corridor, and riparian conservation areas. This would protect visual resources by not allowing surface-disturbing activities associated with mineral development.

Approximately 30,000 acres would be open to locatable minerals. The level of mining activity, would be similar to Alternative B.

Remaining lands in the subunit, 30,000 acres, would be open to new locatable mineral entry. The level of mining activity is expected to increase slightly compared to Alternative A. Two

large-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from both operations would impact 120 to 160 acres over the life of this plan. Up to eight small-scale placer mine operations, one more than in Alternative A, are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine for a total of 20 to 30 acres of disturbance. Impacts from all eight operations would impact 160 to 240 acres over the life of this plan.

No lands open for locatable minerals were identified as VRI Class I, II or III lands. Of VRI Class IV lands one-hundred percent (26,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between 6 to 156 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. Up to three exploration operations may occur over the life of this plan.

Impacts from suction dredging would be similar to Alternatives A, B, and C but would affect a larger area. Approximately 12 suction dredge operations are anticipated annually, each with a camp footprint of less than one acre. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from camps associated with suction dredging are anticipated to be less than 12 acres annually over the life of the plan. Impacts from the various types of mining operations are described under section 4.3.1.9.

Effects from Salable Minerals

Under Alternative E, only the Birch Creek WSR Corridor (69,000 acres) would be closed to salable minerals, protecting the visual resources. Impacts to visual resources by production of salable mineral resources on the remaining 1, 213,000 acres would depend on the scale of the action and the number of mineral sites mined. While ninety-four percent of the subunit is open to salable minerals it is anticipated that demand for material will generally be met from production on state lands and no new federal material sites are anticipated. Impacts to visual resources by the development of salable minerals are described under section 4.3.1.9. Lands open for salable minerals were identified as VRI Class II. Of VRI Class II lands one percent (18,000 acres) would be managed as Class I, seventy-seven percent (90,000 acres) would be managed as Class II lands, and twenty percent (236,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (69,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands, one percent or 17,000 acres would be managed as Class I, seventy percent or 900,000 acres would be managed as Class

II lands while eighteen percent (236,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class III lands one-hundred percent (17,000 acres) would be managed as Class I, less than one percent (8,000 acres) would be managed as Class II lands. Of VRI Class IV lands, less than one percent (1,000 acres) would be managed as Class I while three percent or 34,000 acres would be managed as Class IV lands.

Under Alternative E, the RNAs and Birch Creek WSR Corridor (103,000 acres) would have a VRM Class I. The Semi-Primitive Pinnell Mountain RMZ and Wolf Creek RMZ would have a VRM Class II (421,000 acres) as would the Backcountry Preacher Creek RMZ (488,000 acres). The Bachelor Creek, Clums and Harrison RMZs, both Frontcountry, would have a VRM Class IV (234,000 acres). All other lands would have a VRM Class IV (36,000 acres).

Effects from Travel Management

Under Alternative E, open cross-country travel on BLM lands is restricted to motorized vehicles 1,000 pounds curb weight or less and 50 inches or less in width year round, and may impact visual resources primarily by disturbing vegetation by repeated passes and by clearing of travel routes. Weight restricted travel impacts 1,267,000 acres. This restriction of motorized use to OHVs weighing 1,000 pounds curb weight or less with a width of 50 inches or less helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 1,267,000 acres. However, allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes with impacts to vegetation and soils in line, color and texture. It is anticipated that an additional 300 miles of user-created travel routes would be developed over the life of the plan impacting up to 872 acres. While the total area of impact is very small, only approximately 872 acres (less than 1 percent of the Steese National Conservation Area), the areas likely impacted have relatively high scenic sensitivity. Typically, user-created summer travel routes are more visible than winter travel routes that tend to be positioned near valley bottoms and are protected by snow and frozen ground. Summer travel routes are typically developed in areas that show changes to line, color and texture with repeated passes.

Cross-country travel within Birch Creek WSR Corridor is limited to winter travel with limited impacts to line, color and texture, since summer use of OHVs within the corridor would not be allowed.

Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads only, protecting visual resources by restricting use to already hardened areas. All other vehicle use may be allowed under permit. The impacts would vary depending on the size of vehicle, season of travel, and the number of passes made, but would be similar to impacts described for open cross-country travel in section 4.3.1.9.

Of VRI Class I lands (69,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands, two percent or 16,000 acres would be managed as Class I while seventy percent or 900,000 acres would be managed as Class II lands and eighteen percent or 236,000 acres would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands one percent (17,000 acres) would be managed as Class I lands while less than one percent (8,000 acres) would be managed as Class II. Of VRI Class IV lands one-hundred percent (34,000 acres) would be managed as Class IV lands while less than one percent would be managed as Class II. .

Effects from Wildlife

Under Alternative E, 457,000 acres would be managed to protect crucial caribou and Dall sheep habitat. Management decisions to protect wildlife habitat helps to preserve the visual characteristics of the area. The effects would be the same as Alternative C. Crucial caribou and Dall sheep habitat will remain closed to leasable and locatable minerals, subject to valid existing rights. Seasonal restrictions for a one-half mile radius around ungulate mineral licks will limit development and use in these areas. Seasonal restrictions or closures of areas to motorized use may occur to protect habitat. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 457,000 acres.

Salable minerals, land use permits, and leases could be authorized subject to constraints for ungulate mineral licks, but would be unlikely. The size and scope of impacts would depend on the size of the requested use and techniques used. Impacts to visual resources from travel and various land uses are described in section 4.3.1.9.

No lands within crucial caribou and Dall sheep habitat were identified as VRI Class I, III or IV lands. Of VRI Class II lands one-hundred percent (457,000 acres) would be managed as Class II lands protecting the natural appearance while allowing for a low level of change to the characteristic landscape.

Effects from RNAs and Wild and Scenic Rivers would be the same as Alternative C.

4.5.1.6. Wilderness Characteristics Steese Subunit

Summary of Effects

There are 1,270,000 acres identified within the Steese Subunit as having wilderness characteristics of size, naturalness, and the opportunity for solitude or a primitive unconfined type of recreation experience. Managing lands for wilderness characteristics limit surface-disturbing activities. See section 4.3.1.10 Impacts Common to All Subunits for impacts to wilderness characteristics. Alternative B would protect the most acres for wilderness characteristics while Alternative A would not identify any acres as having wilderness characteristics. Alternative C provides a balance between protection and resource use, while Alternative D provides for resource development and protects the least amount of lands for wilderness characteristics. Alternative E emphasizes other multiple uses while applying management restrictions to reduce impacts to wilderness characteristics.

4.5.1.6.1. Alternative A (No Action)

Effects from Wilderness Characteristics

No lands are managed for wilderness characteristics under this alternative. Of the 1,270,000 acres identified as having wilderness characteristics, none would be directly managed to protect those values. Other actions and management strategies may help protect those value indirectly, such as managing for a Primitive or Semi-Primitive recreation opportunity.

4.5.1.6.2. Alternative B

Effects from Wilderness Characteristics

Of the 1,270,000 acres identified as having wilderness characteristics, 1,199,000 acres (ninety-four percent) would be directly managed to protect those values. These areas include the majority of the Steese SRMA, except the Birch Creek WSR Corridor outside the Steese National Conservation Area. Other actions and management strategies may help protect those values indirectly on the remaining 71,000 acres. Mineral exploration or development is possible on 45,000 acres and on existing mining claims. However the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits.

4.5.1.6.3. Alternative C

Effects from Wilderness Characteristics

Of the 1,270,000 acres identified as having wilderness characteristics, 647,000 acres (fifty-one percent) would be directly managed to protect those values. These areas include Primitive, Semi-Primitive, except Birch Creek RMZ below the Steese National Conservation Area boundary, and Backcountry RMZs. Other actions and management strategies may help protect those values indirectly on the remaining 623,000 acres. Mineral exploration or development is possible on 285,000 acres. However the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking. Development of recreation facilities and travel management in Middlecountry and Frontcountry RMZs, and on other BLM lands would also impact wilderness characteristics.

4.5.1.6.4. Alternative D

Effects from Wilderness Characteristics

Of the 1,270,000 acres identified as having wilderness characteristics, 483,000 acres (thirty-eight percent) would be directly managed to protect those values. These areas include Primitive, Semi-Primitive, except Birch Creek RMZ below the Steese National Conservation Area boundary, and Backcountry RMZs. Other actions and management strategies may help protect those values indirectly on 787,000 acres. Mineral exploration or development is possible on 693,000 acres however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking. Development of recreation facilities and travel management in Middlecountry and Frontcountry would also impact wilderness characteristics.

4.5.1.6.5. Alternative E (Proposed RMP)

Of the 1,258,000 acres identified as having wilderness characteristics, those characteristics would be maintained on 1,009,000 acres by limiting activities that impact size, naturalness

and opportunities for solitude or primitive and unconfined recreation. Mineral exploration or development is possible on 35,000 acres however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect less than one percent of all available acres. If these claims were developed naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking. Development of recreation facilities and travel management in Middlecountry and Frontcountry would also impact wilderness characteristics.

4.5.1.7. Wildlife Steese Subunit

Summary of Effects

Alternative E will result in fewer impacts to wildlife relative to Alternative C, despite allowing cross-country summer OHV use on more than half of the subunit and not precluding all summer OHVs from Primitive, Semi-Primitive, and Backcountry RMZs. Alternative E would avoid impacts from locatable and leasable mineral development in the Steese National Conservation Area by maintaining the withdrawals, whereas in Alternative C withdrawals would be lifted on 274,000 acres. Overall impacts to wildlife would be lowest in Alternative B, and progressively higher in Alternatives E, A, and C, and highest in Alternative D (where more than half the subunit is open to mineral location, entry, and leasing). Potential cumulative impacts in Alternatives C and D include impairment of migratory caribou habitats.

Alternatives C designates the Steese ACEC (457,000 acres) which would provide protection to many key wildlife habitats, including most current and historical caribou calving habitats. In Alternative E, an ACEC is not designated. Instead an identical area is delineated as crucial caribou and Dall sheep habitat, and a very similar set of management decisions apply to the delineated area, including the restriction of summer OHV use to designated trails following travel management plan completion

Management of recreation in Alternatives B, C, and E would generally result in positive effects to wildlife (relative to Alternative A), as most key caribou and Dall sheep habitats would be in Primitive, Semi-Primitive or Backcountry RMZs and/or in an ACEC or delineated crucial caribou and Dall sheep habitat. Alternatives B and C would benefit wildlife by closing all or half (respectively) of the SNCA to summer OHV use, and limiting use of summer OHVs elsewhere to designated trails/routes. Interim management in Alternative E would resemble Alternative A (except that winter snowmobile use would be allowed in RNAs) until a travel management plan is completed. Summer OHV use will then be managed to meet objectives of RMZs and the caribou migration corridor and limited to designated routes in 457,000 acres delineated as crucial caribou and Dall sheep habitat, and possibly elsewhere.

4.5.1.7.1. Alternative A (No Action)

Effects from Wildlife

Present and historical caribou habitat will be managed as a primary land use in this and all alternatives. There is no specific provision in this alternative to monitor or limit off-trail snowmobile use in caribou habitat, and a caribou migration habitat corridor is not identified.

Effects from Leasable Minerals

None of the subunit is open to leasing.

Effects from Locatable Minerals

The entire subunit is currently closed to mineral location and entry. Small- and large-scale placer mining occurs on hundreds of pre-existing mineral claims (totalling 7,000 acres, of which 5,000 acres are in the Steese National Conservation Area). Many valid claims exist along streams in the Clum's Fork area and areas north of Birch Creek, with scattered claims in other areas. Impacts of mining at current levels involves localized disturbance of wildlife and habitats by road, trails, and mining operations and the period of recovery of riparian and aquatic habitats is typically long (see Fish and Aquatic Species section 4.3.1.4 for more description of impacts to these habitats). Roads and trails result in increased off-trail OHV use by recreationists. Under this alternative, some additional mining is likely if minerals prices increase, or if additional access is created.

Effects from Recreation

Existing recreational use and management in the Steese National Conservation Area has focused on Birch Creek WSR, Pinnell Mountain Trail, and highway waysides. Dispersed recreation use occurs from hikers in the Mount Prindle area, and OHV users in portions of Preacher Creek and in the south Steese unit (north of Birch Creek). Only the Primitive Management Unit (adjacent to the White Mountains NRA), the Pinnell Mountain Trail, and the Birch Creek WSR Corridor are closed to summer OHV use. In the areas open to summer OHVs, cross-country travel is allowed, which has created a network of trails. Summer OHV use in the area south of Birch Creek WSR Corridor generally does not occur due to lack of access. This area is rarely visited at any time of year; most use likely occurs by snowmobile in winter and includes some trapping activity. Winter snowmobile use is not restricted anywhere in the subunit, except in the RNAs.

Under Alternative A, recreation affects wildlife primarily along the Pinnell Mountain Trail, Birch Creek, Mount Prindle, and in areas of OHV use. Wildlife is displaced, at least temporarily, by recreational activities, and that effect is greatest at sites of higher recreational use. Disturbance of nesting raptors can potentially lead to nest abandonment or reduced survival of nestlings and likely occurs at times along Birch Creek. Bears can be attracted to garbage which can lead to conflicts and potential removal. Recreational OHV users are becoming more abundant and are traveling further and expanding the zone of impact. User-pioneered trails have expanded into remote portions of the north Steese unit, including the upper North Fork of Preacher Creek. Motor boat use on lower Birch Creek results in wildlife disturbance, including potential impacts to a few nesting bald eagles.

Effects from Travel Management

Most of the subunit (all but the Primitive Management Unit in the north Steese National Conservation Area, RNAs, Pinnell Mountain Trail and Birch Creek WSR Corridor) is open to cross-country OHV travel and susceptible to the impacts of cross-country travel described in the section 4.3.1.12 Impacts Common to all Subunits. The area to the south of the Birch Creek WSR Corridor, although open to OHVs, has received very little use due to the inability to legally cross Birch Creek and the remoteness. If access were developed to the unit from the south, OHV use would likely occur in that area. Development of motorized access within any of the subunit would expand the intensity and area of OHV use. All areas except RNAs are open for snowmobile use and extensive off-trail use, which could potentially impact wildlife, especially caribou winter habitats that are sparsely or non-forested.

Effects from Special Designations

Mount Prindle and Big Windy Hot Springs RNAs are the only specially designated areas. In Alternative A, no camping is allowed in the RNA (though this has not been enforced) to avoid disturbing research projects. This limits human activities in the areas and limits disturbance of Dall sheep, gyrfalcon, and other species.

Management of Birch Creek as a WSR, even though it attracts recreational use, limits impacts to wildlife overall.

4.5.1.7.2. Alternative B

Effects from Wildlife

A wildlife decision (section 2.8.2.1.1.6 Wildlife) to monitor snowmobile use of non-forested caribou habitat, and adjust management if necessary, will reduce potential future impacts should use of these habitats increase. An identified caribou migration corridor (Map 68) is closed to mineral location, entry, and leasing and density of developments will be monitored and limited.

Effects from Leasable Minerals

Only BLM lands near Circle are open to leasing (34,000 acres). No leasable minerals are expected to be developed in the Steese Subunit due to low potential for occurrence of economically recoverable resources. The RMP will need to be amended before coal could be leased. Leasing of other minerals would require additional NEPA analysis. Seismic exploration for leasable minerals could occur in the areas open to leasing resulting in local displacement of wildlife and some fragmentation of habitat. This is one of two areas (the other being across the Yukon River to the east in the Upper Black River Subunit) where oil and gas leasing is considered most likely to occur during the life of the plan. The entire subunit may be considered for coal inventory and exploration, although none is predicted in the subunit due to small potential (Map 88). Considerable surface disturbance may occur with exploration for coal.

Effects from Locatable Minerals

With the exception of BLM lands near Circle (34,000 acres), nearly all areas in the subunit are closed to location and entry of new mining claims. Except in the areas near Circle, impacts of mining will be very similar to Alternative A. Exploration for locatable minerals would also occur only on BLM lands near Circle and on 7,000 acres of valid existing claims. Additional access could be developed to reach existing claims. Little additional mining is expected under this alternative. However, mineral price increases or changes in access could result in greater mining activity.

Effects from Recreation

The Steese SRMA, including most BLM lands in the subunit, would have specific management objectives and prescription settings (Map 49). The entire SRMA would be managed as Primitive, Semi-Primitive, or Backcountry. The level of use expected under this management would have very small impacts to wildlife. Most of the area would be in a Primitive classification (1,034,000 acres) and would prohibit summer OHV use (other than use under a subsistence permit). This would largely eliminate potential impacts from recreational motorized vehicle use.

Effects from Travel Management

Almost the entire subunit (except for lands near Circle and Birch Creek) would be managed for recreation settings which do not allow summer OHV use. All areas except RNAs are open for snowmobile use and extensive off-trail use could potentially impact wildlife, especially caribou winter habitats that are sparsely or non-forested. There are wildlife management actions in this alternative which call for monitoring of such use and adjusting management when necessary to minimize impacts to caribou and Dall sheep.

Qualified subsistence users would be allowed to access all portions of the Steese subunit with OHVs (except RNAs) after acquiring a free permit. Relative to other alternatives, this would introduce new impacts to areas that are currently closed to summer OHV use (including the Rocky Mountain Primitive zone and Birch Creek WSR Corridor). In addition to impacts from subsistence users, some non-qualified users will be attracted by existing and new tracks and trails. However, the use by subsistence users would be relatively small and, because the entire Steese National Conservation Area would be closed to casual use and a permit required for subsistence users, unauthorized use would be relatively easy to control. Impacts from OHV use would likely be lower in this alternative relative to Alternatives A and D, but higher than Alternative C where OHV use is limited to Middlecountry and Frontcountry RMZs and cross-country travel is not allowed.

Effects from Special Designations

Designated RNAs are the same as Alternative A and managed similarly. The Steese ACEC boundaries were drawn to include the majority of historical calving habitats of the Fortymile caribou herd, which includes most of the Steese National Conservation Area. The large area of historical calving also includes the current calving and postcalving habitats of the White Mountains caribou herd and current postcalving habitats of the Fortymile herd, as well as all Dall sheep habitats in the National Conservation Area. Calving and postcalving habitats are considered the most sensitive for the Fortymile herd (Fortymile caribou herd Planning Team 2000). The ACEC is closed to mineral location, entry and leasing and motorized vehicle use will be limited so as to maintain caribou and sheep habitat quality. In this alternative, the entire SRMA is designated as a Primitive, Semi-Primitive, or Backcountry RMZ and, because these RMZs are closed to motorized vehicle use and mineral location, entry and leasing, ACEC designation will have little additional effect. SOPs will apply to other activities permitted by the BLM in the ACEC, which would provide some additional protection to caribou and sheep. This alternative, with or without ACEC designation, will best assure long-term habitat conservation.

Big Windy Creek would be considered suitable for designation as a “wild” river. Management as a “wild” river would differ little from that otherwise proposed in this alternative. However WSR designation would be more permanent than provisions in this plan and would better protect wildlife values along Big Windy Creek (Appendix E, *Wild and Scenic Rivers Inventory*).

Effects from Land Use Authorizations

Only in Alternative B would any portion of the Steese subunit be considered a ROW Avoidance area (ACEC, RNAs, Birch Creek WSR corridor). Attempting to place ROWs outside of these areas, where feasible, would generally benefit wildlife, because these are high value wildlife habitats.

4.5.1.7.3. Alternative C

Effects from Wildlife

Same as Alternative B, except that only portions of the caribou migration corridor will be closed to mineral location, entry, and leasing.

Effects from Leasable Minerals

A much larger portion of the subunit (285,000 acres) is open to leasing of minerals under this alternative than Alternative B. Effects from exploration would be similar to those in Alternative B, except that exploration will be more likely to occur in areas that are open to leasing.

Effects from Locatable Minerals

More than half of BLM lands in the subunit will remain closed to mineral entry (992,000 acres), including the Birch Creek WSR Corridor, an area south of Birch Creek (which includes the Clum's Fork calving area, Dall sheep habitat, and recent caribou calving habitat), and most of the north Steese National Conservation Area (which includes the White Mountains caribou calving/postcalving habitat and Dall sheep habitat, and portions of the historical Fortymile calving habitat). A closed area (Map 34) adjacent to upper Birch Creek WSR Corridor is within the historical Fortymile caribou migration corridor.

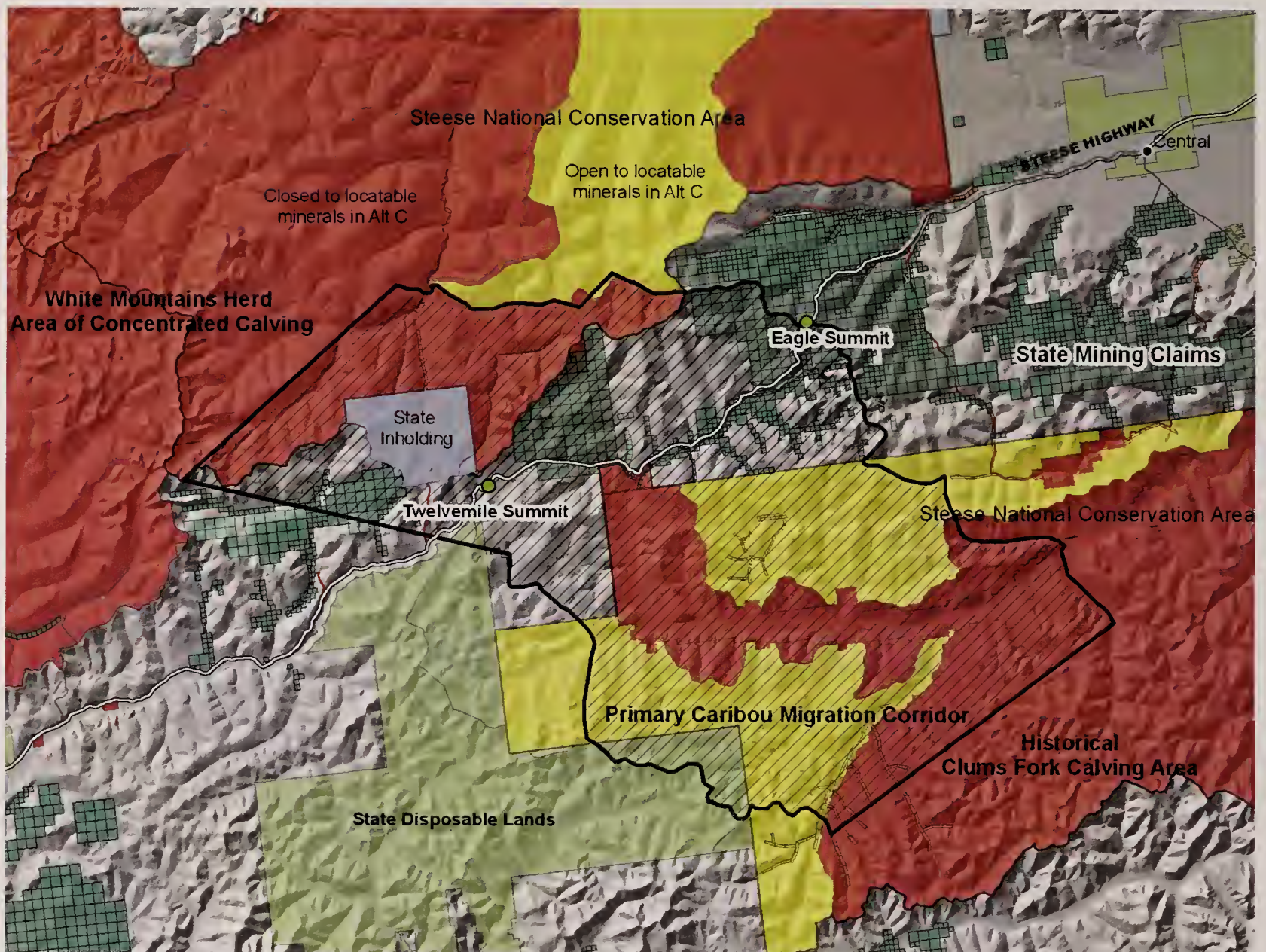
All Dall sheep habitat and most current and recent caribou calving/postcalving habitat is closed to mineral location and entry in this alternative, minimizing potential impacts to sheep and caribou. Most identified priority raptor nest sites are within areas closed to mineral entry; SOPs (Appendix A) would apply to open areas and reduce impacts.

Substantial increases in placer mining activity are predicted under this alternative, approximately doubling the number of large and small-scale placer operations from that expected under Alternatives A and B. This will increase the areas of localized disturbance to riparian and aquatic habitats which feature typically long recovery periods (see Fish and Aquatic Species section 4.3.1.4 for more description of impacts to these habitats), and increase the miles of roads and trails needed for access. Roads and trails result in increased off-trail OHV use by recreationists, however summer OHV use will be limited to existing trails in this alternative.

Much of the area historically used by Fortymile caribou to access White Mountains and Preacher Creek calving/postcalving habitat in the White Mountains is open to mineral entry (Figure 4.6, "Caribou Migration Corridor and Minerals Decisions"). Roads, trails, mining operations with high density and levels of activity could potentially reduce the likelihood of future re-establishment of a pattern of migration to those calving habitats, resulting in an effective loss of habitat. A caribou migration corridor has been identified in the wildlife section of this alternative (Map 68) which includes the central, more highly used portion of historical migration habitat (which was also used as calving and postcalving habitat historically). The wildlife decision directs road and trail density in the corridor to be limited to ensure use by caribou for migration. However, the BLM has little control over the density of roads, trails, and mining operations used by miners to develop valid mining claims and no control over what occurs on state and private land within the corridor. The opening of portions of the area to mineral location and entry, could result in a greater density of roads in an already relatively densely roaded area.

Greater than predicted increases in mining activity are possible with the opening of twenty-two percent of subunit (285,000 acres) to mineral location and entry. Dependent on the results of exploration, prices of minerals, and access routes which may be provided by other activities, mining activity can vary substantially and impacts could be considerably greater than anticipated. Possible development of a large lode deposit in the Steese highway vicinity could spur

considerable interest and activity in nearby areas of the Steese National Conservation Area. Also, the staking of mining claims can result in effects long beyond the life of the plan.



BLM lands open to locatable mineral entry in Alternative C and state mining claims (circa 2011) in and near a delineated caribou migration corridor.

Figure 4.6. Caribou Migration Corridor and Minerals Decisions

The opening of new areas to mineral location and entry will likely result in substantial exploration activity. Surface disturbance due to explorations at the Livengood Money Knob lode mine, for example, has involved miles of roads and many drill pads. One such pre-feasibility development operation is predicted, involving 10 acres of disturbance per year for five years and heavy helicopter use to and near the site (12 hr/day flight time). SOPs (Appendix A) concerning activities near priority raptor nest sites will apply in all action alternatives, but not all nest sites of priority raptors are known and few nest sites of other raptors are known. SOPs limit activities in caribou calving/postcalving, but disturbance of caribou may occur outside of the restricted time periods.

Effects from Recreation

More lands are designated as Frontcountry and Middlecountry than in Alternative B, resulting in more facilities and greater recreational use, including motorized use. However, most key wildlife habitats are in Primitive, Semi-Primitive, or Backcountry RMZs, with the exception of much of the caribou migration corridor.

Effects from Travel Management

Summer OHV use will be allowed over most of the subunit and winter OHV use allowed over all of the subunit except RNAs. Summer OHV travel will be limited to a set of existing routes which will greatly reduce impacts and potential impacts to wildlife and wildlife habitat (described in section 4.3.1.12 Impacts Common To All Subunits). In some places, existing trails will be replaced by constructed, sustainable trails or new trails will be constructed in areas with no trails. In contrast to Alternatives A and D, construction of trails will not result in increased cross-country use in the vicinity of the trail. Constructed trails can be routed to minimize impacts to wildlife. The potential for impacts to wildlife from motorized vehicle use will be much reduced in this alternative relative to Alternative A, due to reduced area where they are allowed and restricting of use to existing routes. As in Alternative B, all areas except RNAs are open for snowmobile use and extensive off-trail use could potentially impact wildlife, especially caribou winter habitats that are sparsely or non-forested. There are wildlife management actions in this alternative which call for monitoring of such use and adjusting management when necessary to minimize impacts to caribou and Dall sheep.

Effects from Special Designations

Designated RNAs are the same as Alternative B, but primitive camping is allowed, which may result in slightly greater human activities in the areas and disturbance of Dall sheep, gyrfalcon, and other species.

Relative to Alternative B, this alternative excludes large areas (467,000 acres) of historical Fortymile caribou calving and migration habitat from the ACEC. The Alternative C ACEC includes current White Mountains calving/postcalving habitat, Dall sheep habitat and ungulate mineral licks (Preacher Creek and Big Windy/Puzzle Gulch), current Fortymile concentrated calving/postcalving habitats, and the Clum's Fork calving area used by the Fortymile herd in the 1960s and 1970s.

The ACEC in this alternative largely falls within the Rocky Mountain Uplands RMZ (Backcountry) and the Wolf Creek RMZ (Semi-Primitive; Map 50), which do not allow motorized vehicle use and are closed to mineral location, entry, and leasing. SOPs (Appendix A) will apply to other activities permitted by the BLM in the ACEC and provide some additional protection to caribou and sheep. The ACEC overlaps a portion of the Clums RMZ in the Clums Fork drainage and it is only here that the ACEC would result in significant modification of future management. In this area, which has many existing mining claims, the ACEC designation will limit motorized use and not allow additional mining claims or mineral leasing. The Clums Fork calving area was used by Fortymile caribou for at least 16 years in the 1960s and 1970s. In Alternative A this area was identified to remain closed to mineral entry to protect the value of the area as caribou calving habitat. The ACEC designation will maintain the mineral entry closure and also minimize motorized use at a level which will maintain the value of the habitat for caribou.

The exclusion of 467,000 acres of historical calving and migration habitats from the ACEC (relative to Alternative B) could result in somewhat reduced potential for future use of these habitats by Fortymile and White Mountains caribou. The higher levels of recreational activities (especially motorized activities) and mineral development allowed in this area will result in some fragmentation of caribou habitat and avoidance of the vicinity of those activities. The area designated as a "caribou migration corridor" in this alternative, has an objective to limit the density of development in the area to that which will allow the future re-establishment of a pattern of migration to historical calving habitats. However, allowance of mineral location and entry

could restrict the ability of BLM managers to limit development in the corridor, as reasonable access must be granted to mining claim owners.

The ACEC, in addition to Dall sheep habitat and caribou calving/postcalving habitat is also used by caribou during all other seasons. Other wildlife species in the area will benefit as well from management as an ACEC.

Big Windy Hot Springs is not classified as suitable for designation as a “wild” river in this alternative. This will have little effect during the life of the plan, due to other management provisions (e.g., within a Semi-Primitive RMZ and the Steese ACEC), but may provide less protection in the longer term.

4.5.1.7.4. Alternative D

Effects from wildlife

The fewest protections for wildlife, especially caribou, are included in this alternative, negative effects on wildlife will be greatest. No special protection of caribou migration corridor habitats is included.

Effects from Leasable Minerals

A large portion, 54 percent of the subunit, is open to leasing of minerals (compared to 22 percent in Alternative C). Leasing is not expected anywhere in the subunit and seismic exploration is expected only on BLM lands near Circle. Some caribou calving/postcalving habitat and Dall sheep habitat, including the area around the Preacher Creek mineral lick, is open to leasing. Most of the caribou migration corridor is open and no special provisions apply to the caribou migration corridor in this alternative. Effects would be similar to Alternative C, except more area, including some sensitive habitats, are open.

Effects from Locatable Minerals

More than half (fifty-four percent; 693,000 acres) of the subunit will be open to mineral location and entry (Map 34). The areas that are closed under Alternative C but open under this alternative include portions of current White Mountains caribou calving/postcalving habitat (and historical Fortymile calving/postcalving/and migration habitat) and a Dall sheep mineral lick movement corridor.

Relative to Alternative C, some increases in suction dredging (thirty-three percent) and small-scale placer (sixty percent) operations are predicted under this alternative. Fewer RCAs are designated and many are open to locatable minerals. There will be an increase in the areas of localized disturbance to riparian and aquatic habitats and long recovery periods can be expected (see Fish and Aquatic Species section 4.3.1.4 for more description of impacts to these habitats). Miles of roads and trails needed for access will also increase. Roads and trails result in increased off-trail OHV use by recreationists. In this alternative, cross-country OHV use is allowed in all areas open to mining.

Relative to Alternative C, this alternative will provide less protection to north Steese National Conservation Area caribou calving/postcalving habitats and less assurance that migration of Fortymile caribou to these habitats will remain largely unimpeded.

Almost all of the area historically used by Fortymile caribou to access White Mountains and Preacher Creek calving/postcalving habitat in the White Mountains is open to mineral entry. This is a considerable increase in open area relative to Alternative C. Roads, trails, and mining operations with high enough density and levels of activity could potentially reduce the likelihood that the pattern of migration to those calving habitats would in the future be re-established, resulting in loss of habitat. The “caribou migration corridor” management provisions in Alternatives B and C, which direct road and trail density to be limited to ensure use by caribou for migration, are not part of Alternative D. Impacts to caribou calving/postcalving and migration to the White Mountains would be higher than under Alternative C. Use by Dall sheep of the movement route to a mineral lick on Preacher Creek could be impaired by mining or road activity. This route has little to no escape terrain, and so sheep are likely very sensitive to disturbance while using it.

Greater increases in mining activity than predicted are possible with the opening of larger areas to mineral location and entry. Dependent on the results of exploration, prices of minerals, and access routes which may be provided by other activities, mining activity can vary substantially and impacts could be considerably greater than anticipated. Also, the staking of mining claims in a considerably larger area open to staking can result in effects long beyond the life of the plan.

Effects from Recreation

The Rocky Mountain Uplands Backcountry RMZ is reduced in size from that in Alternative C and is similar in size and location to the Primitive Management Unit in Alternative A (Map 51). The allowance of cross-country OHV use will compound the impacts in areas where OHVs would be allowed (Middlecountry and Frontcountry RMZs). Caribou use of calving/postcalving, summer, and migration habitats and Dall sheep use of a mineral lick (in the Preacher Creek RMZ) could potentially be affected by allowed cross-country OHV use, if that level of use increases.

Effects from Travel Management

Potential for impacts to wildlife from summer OHV use are greater than Alternative C due to increased area in which they are allowed and the allowance of cross-country OHV use. Impacts are very similar to Alternative A. Alternative D includes the large Wolf Creek Backcountry RMZ (Map 51), which is closed to summer OHV use, while Alternative A allows such use in that area; however the area is essentially inaccessible. All areas except RNAs are open for snowmobile use and extensive off-trail use could potentially impact wildlife, especially caribou winter habitats that are sparsely or non-forested. No specific management provisions for monitoring of excessive off-trail use and making management changes are included in this alternative.

Effects from Special Designations

The effects from RNAs are the same as Alternative C.

The Steese ACEC includes only Dall sheep mineral licks, core calving habitats of the White Mountains caribou herd, the recently used Clums Fork calving area (Fortymile herd) and the current concentrated calving/postcalving range of the Fortymile herd (193,000 acres). These areas will be closed to mineral entry, location, and leasing.

In most of the remainder of the subunit, mineral location, entry, and leasing are allowed. However, much of Fortymile historical calving range and Dall sheep habitat south of Birch Creek occurs in the Wolf Creek (Semi-Primitive) RMZ, which is closed to mineral location, entry, and

leasing. Important wildlife habitats open to mineral location, entry and leasing in Alternative D include a movement corridor to the Preacher Creek Dall sheep mineral lick, historical Fortymile calving/postcalving habitat in both north and south Steese National Conservation Area, current White Mountains caribou calving/postcalving habitat in the north Steese National Conservation Area, and caribou migration habitats. These areas outside the ACEC and open to mineral entry, location, and leasing are also to be managed as Frontcountry and Middlecountry RMZs and summer cross-country OHV use will be allowed. Although activities in these areas are currently not heavy, the combined effects of opening them to mineral location, entry, and leasing and allowance of unrestricted summer OHV use may result in degradation of wildlife habitat in these areas, including reduced use of the Preacher Creek Mineral lick by Dall sheep, reduced likelihood of reestablishing migration to White Mountains calving range by the Fortymile Herd, and reduced calving habitat quality in these areas.

Effects from Wild and Scenic Rivers designation and management are the same as Alternative C.

4.5.1.7.5. Alternative E (Proposed RMP)

Effects from Wildlife

Same as Alternative B, except that a set of management decisions and SOPs will apply to delineated crucial caribou and Dall sheep habitats instead of to a designated ACEC. These management decisions and SOPs will maintain effectiveness of these habitats for supporting caribou and Dall sheep, much as very similar ACEC management provisions would in Alternative C. In alternative E, summer OHV use is not prohibited in any RMZ (it was not allowed in Primitive, Semi-Primitive, or Backcountry RMZs in Alternative C). Management provisions that apply to crucial caribou and Dall sheep habitats will be considered during Travel Management Planning and reduce potential impacts of summer OHVs within the crucial caribou and Dall sheep habitats, in part by limiting use to designated trails. In the caribou migration corridor, OHV use will be managed to “ensure free movement of caribou between upper Birch Creek, the north Steese National Conservation Area, and the White Mountains NRA” but will not necessarily be limited to designated trails, as in Alternatives B and C.

Effects from Forest and Woodland Products

Commercial timber sales would not be allowed in Birch Creek WSR Corridor, RNAs or crucial caribou and Dall sheep habitat (527,000 acres), generally benefiting wildlife by avoiding road and trail development and changes to forest habitats. However, commercial timber salvage sales and personal use of timber are allowed on all lands. In Alternative C, commercial timber sales and commercial timber salvage sales are allowed on all but 72,000 acres.

Effects from Leasable Minerals

All but 30,000 acres of BLM lands in the subunit will remain closed to mineral entry, including the Birch Creek WSR Corridor and all of the Steese National Conservation Area. As in other alternatives, seismic exploration could occur on BLM lands near Circle, resulting in local displacement of wildlife and some fragmentation of habitat.

Effects from Locatable Minerals

All but 30,000 acres of BLM lands in the subunit will remain closed to mineral entry, including the Birch Creek WSR Corridor and all of the Steese National Conservation Area. This will eliminate

potential impacts from Locatable Minerals on Dall sheep and caribou calving habitat in the closed areas other than mining on existing claims. (There are currently about 100 valid mining claims and 10 active mining operations in the National Conservation Area). Placer mining on existing claims will create areas of localized disturbance to riparian and aquatic habitats which feature typically long recovery periods (see Fish and Aquatic Species section 4.3.1.4 for more description of impacts to these habitats), and may result in some road and trail construction needed for access.

Much of the land with high mineral potential in the subunit occurred within a corridor historically used by caribou for migration to calving areas in Beaver and Birch creeks (Map 68). Potential impacts to those habitats from minerals development will be avoided. This will enable BLM to maintain control of road and trail density within that corridor and help to ensure that caribou can freely re-establish a pattern of migration to calving habitats. Significant growth of the Fortymile caribou herd may depend on that expansion of calving range into the White Mountains (Boertje et al. 2012).

The area is already relatively densely roaded and so, by remaining closed to mineral development, a higher density of roads can be avoided.

Effects from Recreation

More lands are designated as Semi-Primitive and Backcountry RMZs than in Alternative C, resulting in fewer facilities and lower levels of recreational use, including motorized use. Most key wildlife habitats are in Primitive, Semi-Primitive, or Backcountry RMZs, with the exception of much of the caribou migration corridor, which includes Middlecountry and Frontcountry RMZs.

Effects from Travel Management

Summer OHV use will be allowed over most of the subunit (except RNAs) and winter OHV use allowed over all of the subunit, including RNAs. Summer OHV travel will not be limited to a set of existing routes (as it was in Alternative C) which will greatly increase impacts and potential impacts to wildlife and wildlife habitat (described in section 4.3.1.12 Impacts Common To All Subunits), especially in Middlecountry and Frontcountry RMZs. In those RMZs, cross-country travel will make it difficult to manage density of linear disturbance in the caribou migrations corridor. However, the extent of Primitive and Backcountry RMZs (where motorized use will be limited) is larger than in Alternative C.

Summer OHV use is not precluded in Primitive, Semi-Primitive, and Backcountry RMZs, as it is in other action alternatives, and could result in impacts to wildlife and wildlife habitats. However, summer OHV use will be regulated in order to meet management settings for these RMZs, and could be also be prohibited during Travel Management Planning (which will entail additional NEPA analysis). Effects of summer OHVs in Alternative E will depend on the length of time necessary to complete a Travel Management Plan, because significant expansion of the trail system could occur in that time.

All areas are open for snowmobile use in Alternative E (including RNAs) and extensive off-trail use could potentially impact wildlife, especially caribou winter habitats that are sparsely- or non-forested. There are wildlife management actions in this alternative which call for monitoring of such use and adjusting management when necessary to minimize impacts to caribou and Dall sheep. A Travel Management Plan, which is to be completed within five years could limit cross-country summer OHV travel and limit use.

Snowmachine use will be allowed in RNAs during winter, potentially impacting nesting raptors in the Mount Prindle RNA (gyrfalcon and peregrine falcon) and Dall sheep use of areas of habitat not immediately near extensive escape terrain.

Motorboat use on Birch Creek has been limited by low water levels and narrow channels on the upper end. Motorboat use is common on the lower end, but uncommon upstream in the Steese National Conservation Area, due to distance from the put-in and shallow waters in the Steese National Conservation Area. Rapids below the mouth of Clum's Fork limit most motorboat use. Alternative E is unique in allowing airboats and hovercraft in the Steese National Conservation Area (it is silent on personal watercraft which would be prohibited in Alternatives B–D). Airboats may utilize the South Fork and Birch Creek upstream to near the Clums Fork. The rapids below Clums Fork would likely limit passage of airboat traffic upstream, and confined channels may limit use of the upper river by airboats except in high water. Hovercraft could navigate all of the River; could navigate up major tributaries as well, such as the South Fork and Clum's Fork; and could also potentially enter the river from Harrison Creek. Personal watercraft could be very disturbing to wildlife along the river, however, they are not likely to be used in shallow waters of upper Birch Creek and would not likely travel into the Steese National Conservation Area from the lower Birch Creek put-in. See "Effects Common to All Subunits" for a discussion of effects from motorized boats. Allowance of these types of boats within the Steese National Conservation Area would also likely increase traffic of these boat types in the lower portions of Birch Creek National Wild and Scenic River.

Effects from Special Designations

A Steese ACEC is not designated in this alternative. Instead, an area equivalent to the Steese ACEC in Alternative C is delineated as crucial caribou and Dall sheep habitat and very similar (nearly identical) management decisions and SOPs are applied. Wildlife habitat values should be very similarly maintained as those in the Alternative C ACEC, although potentially given slightly lower priority relative to other resources and uses.

4.5.1.7.6. Cumulative Impacts

Cumulative impacts will accrue from BLM management decisions in addition to activities on surrounding lands during and beyond the life of the plan. Cumulative impacts to caribou in Alternatives C and D may potentially be substantial if development reduces the potential for Fortymile caribou to use the historical migration corridor and therefore calving habitats in the north Steese National Conservation Area and White Mountains NRA. There are indications that re-establishment of a pattern of use of the White Mountains NRA and portions of the north Steese National Conservation Area by caribou during calving and summer may be necessary for the Fortymile herd to continue to grow without a decline in nutritional condition. Re-establishing this migratory pattern may be less likely if levels of surface disturbance and human activity are high. This could result from combinations of increased recreational use of the area, increased use of the Steese Highway, high levels of mineral development, and disposal of state lands with associated private land development. Alternatives B and E will maintain mineral withdrawals in the Steese National Conservation Area and minimize potential cumulative impacts from locatable and leasable mineral development to those occurring on existing mining claims and on state and private lands.

More than one third of the delineated migration corridor is comprised of state land that lies on both sides of the Steese Highway and between the north and south units of the Steese National

Conservation Area (Figure 4.6, “Caribou Migration Corridor and Minerals Decisions”). More than a quarter of the state lands currently open to mining claims in this corridor were staked (mostly as lode claims) as of May 2011. Adjacent areas of the Steese National Conservation Area will also be open to both locatable and leasable minerals in Alternatives C and D. Development of minerals in the Steese National Conservation Area could add cumulative impacts to those occurring as a result of mineral and other development on adjacent state lands in and near the identified corridor. The total area open for mineral development ranges from thirty-four percent of the corridor in Alternative B and E (where no BLM lands in the Steese NCA except existing claims are open for mineral development) to fifty-nine percent in Alternative C and eighty percent in Alternative D. The *Reasonably Foreseeable Development* scenario predicted that additional mining activity in the Steese National Conservation Area would not increase substantially under any Alternative, but most of that activity is likely to occur within or near the migration corridor. In addition, impacts beyond the life of the RMP from opening to mineral location and entry could occur because large mines take many years to get started and because mining claims can be maintained indefinitely. Once opened to mineral location and entry, future management options become limited. After mining claims are validly staked, it may be difficult for BLM or the State to manage the area for a level of disturbance which does not reduce caribou use.

Alternative E would avoid increases in direct impacts from locatable or leasable mineral development, by maintaining existing withdrawals in the entire Steese National Conservation Area. Management of OHVs in Alternative E could increase potential cumulative impacts to caribou migration and calving/postcalving habitats, relative to Alternatives B and C. Considering all decisions in Alternative E together, it will be more protective of caribou habitats than all alternatives except B, and will thereby reduce potential cumulative impacts to caribou and other wildlife.

See also section 4.3.1.12 Impacts Common to All Subunits.

4.5.2. Resource Uses

4.5.2.1. Locatable Minerals Steese Subunit

Summary of Effects

Alternative A would not open up any new lands for locatable minerals. Future exploration and development would be limited to existing claims. As claims are lost, new claims could not be restaked and mining activity would decrease over time. Alternatives B, C, D, and E would open up additional land to locatable mineral entry, ranging from 30,000 acres in Alternative E to 682,000 acres in Alternative D. Certain lands remain closed throughout all the alternatives: Birch Creek WSR Corridor, Mount Prindle and Big Windy Hot Springs RNAs, Wolf Creek RMZ, Pinnell Mountain Trail RMZ, Rocky Mountains Uplands RMZ, Steese ACEC, disposal lands, and the BLM’s Central Administrative Site. Alternative D would open the Bachelor and Preacher Creek drainages to locatable minerals. This area has mineral potential as well as reasonable access. Economic effects of mineral decisions are discussed in section 4.5.4.1 Economics Steese Subunit.

4.5.2.1.1. Effects Common to All Alternatives

State- and Native-selected lands would remain segregated from mineral entry and location until final land title has been established. New mining operations on withdrawn lands would require a

validity exam prior to approval of a Plan of Operation. All active mining operations would be required to submit a Plan of Operation if the 1,000 ton bulk sample is exceeded (3809.11(b)) or if cyanide is used in the processing of amenable ores. Mining claim surface occupancy is guaranteed, but must remain reasonably incident to the current levels of mining activity. Bonding is required of all mining operations other than those grandfathered under 43 CFR 3809.300 and 43 CFR 3809.400. Reclamation of surface disturbance would be required. Undue and unnecessary degradation would remain the standard for mining operations on BLM lands. The right of reasonable access across BLM lands to unpatented federal mining claims is assured. Cultural resources encountered during surface-disturbing activities are subject to the Antiquities Act (43 CFR 3809.420(b)(8)).

Riparian Conservation Areas (RCAs) are being instituted on drainages that have been identified as high priority fish habitat. Additional baseline data would be required in these areas prior to surface disturbance on valid existing claims. Active restoration practices would be developed and implemented in these areas, increasing costs for operators.

4.5.2.1.2. Alternative A (No Action)

Under Alternative A, no withdrawal review would occur and ANCSA 17(d)(1) withdrawals would not be revoked. The BLM would continue to administer new and existing operations on federal unpatented mining claims through Notices or Plans of Operations. However, the potential for future exploration and development would be limited to 5,000 acres of existing mining claims. Overall mining activity would decrease as there would be no opportunity to stake new federal mining claims to offset the claims that disappear. This alternative would offer no process to address existing withdrawals.

4.5.2.1.3. Alternative B

Under Alternative B, 1,233,000 acres in the Steese Subunit would be closed to locatable mineral entry (Map 32), including the Steese National Conservation Area, the Birch Creek WSR, disposal lands, and BLM's Central Administrative Site. There would be 21 RCAs, all in the closed areas. The lands closed to mineral entry include high mineral potential areas. The minerals in these closed areas would not be available for the benefit of society.

The remaining 34,000 acres in the subunit would be available to mineral location. The open lands would include low mineral potential lands near Circle. New claims could be staked on tributaries to Birch Creek or the Yukon River, but would be limited to small-scale operations due to the limited resource potential. This alternative would provide more opportunities than Alternative A, but would still greatly limit mining opportunity.

4.5.2.1.4. Alternative C

Under Alternative C, 993,000 acres in the Steese Subunit would be closed to locatable mineral entry (Map 34), including portions of the Steese National Conservation Area, the Birch Creek WSR, disposal lands, and BLM's Central Administrative Site. There would be 18 RCAs, most of which are within closed areas. The RCA designation would have little effect because all of the RCAs except two near Circle are withdrawn from mineral entry.

Preacher Creek and Bachelor Creek drainages (including some tributaries) would be closed except for valid existing claims. These streams are considered high potential for locatable minerals and

have road access. The minerals located within these drainages, and other areas that would be closed under this alternative, would not be available for the benefit of society. Those minerals would be unrecoverable for the foreseeable future.

Approximately 274,000 acres, or twenty percent of the Steese Subunit, would be available to mineral location under Alternative C, including high mineral potential lands within the northern and western portion of the South Steese National Conservation Area Unit. These areas contain roads and trails which facilitate access. Having available access into these high potential lands would account for the majority of the anticipated 18 small-scale placer operations and nine suction dredge operations.

4.5.2.1.5. Alternative D

Under Alternative D, 585,000 acres (forty-six percent of the Steese Subunit) would be closed to locatable mineral entry, including portions of the Steese National Conservation Area, the Birch Creek WSR, disposal lands, and the BLM's Central Administrative Site (Map 36). These minerals and their benefits to society would remain unavailable for the foreseeable future.

There would be eight RCAs, mostly along Birch Creek. Parts of the RCAs are within closed areas. The RCAs in areas recommended to be open would restrict placer mining. RCA designation would increase operational costs due to required pre-disturbance documentation and enhanced reclamation requirements. This additional cost for doing business would turn many prospective operators away, and recovery of minerals within RCAs would not be available for the benefit for society.

The remaining 682,000 acres (fifty-four percent) of the subunit would be open to locatable minerals, including Bachelor and Preacher creeks. These accessible and high mineral potential lands would account for the majority of the 24 anticipated small-scale placers and 12 suction dredge operations.

4.5.2.1.6. Alternative E (Proposed RMP)

Under Alternative E, 1,237,000 acres would be closed to locatable mineral entry, including the Steese National Conservation Area, the Birch Creek WSR, RCAs, and the BLM's Central Administrative Site. RCAs would be the same as Alternative B. All RCAs would be closed to mineral entry, even those outside of the Steese National Conservation Area and Birch Creek WSR Corridor. This alternative would be the most restrictive.

The remaining 30,000 acres in the subunit would be available to mineral location. The open lands include low mineral potential lands near Circle. New claims could be staked on tributaries to Birch Creek or the Yukon River, but would be limited to small-scale operations due to the limited resource potential. This alternative would provide more opportunities than Alternative A, but would still greatly limit mining opportunity.

4.5.2.1.7. Cumulative Impacts

Impacts to locatable minerals that are individually minor may cumulatively reduce exploration and production of commodities from public lands. Factors that affect mineral extraction and prospecting include, but are not limited to, such things as permitting and permitting delays, regulatory policy, public perception and concerns, travel management, transportation, mitigation

measures, proximity to sensitive areas (such as ACECs, RCAs), low commodity prices, taxes, and housing and other necessities for workers. Many of these issues are issues over which the BLM has no control. Most of these issues result in additional costs and/or permitting delays that can individually or cumulatively impact projects.

Public lands that currently have no access could reduce the amount of mineral exploration and development that may occur. Mineral resources on non-BLM lands may not be developed if the adjacent public lands are withdrawn from mineral entry because it may not be economical to develop if only a portion of the deposit is available.

Alternatives B and E in the Steese Subunit would be the most restrictive to mineral development and would result in the greatest cumulative impacts. It proposes the most acres closed to mineral entry, the most areas limited or closed to motorized travel, and the highest protection to other resources. Alternative D would have the least cumulative impact to locatable minerals.

4.5.2.2. Recreation Steese Subunit

Summary of Effects

The proposed alternatives would result in a wide range of possible recreation experiences and activities. Proper resource management, including site-specific measures to protect healthy, functioning watersheds, riparian areas, and associated fish and wildlife habitats, would result in short- and long-term, beneficial impacts to fish and wildlife related recreation. Special designations and management of areas, including ACECs and WSRs, would further protect areas within the subunit, potentially increasing wildlife populations that benefit wildlife viewing, hunting, and fishing opportunities as well as other values such as scenic, geologic and historic which enhance recreational experiences.

Proposed management in ACECs and WSRs would encourage recreation activities of a more non-motorized, Semi-Primitive nature. As the size and scope of these special designations change, opportunities for non-motorized forms of recreation would also change. Proposed management in ACECs and WSRs would impact recreation negatively, if additional restrictions were placed on OHV use or other recreational activities.

The delineation of a SRMA and subsequent Recreation Management Zones, within the Steese National Conservation Area and Birch Creek WSR would protect and enhance recreational resources providing a range of opportunities while encouraging specific targeted outcomes in these areas. Land, and water activities would continue to remain the focus in these designations, including the commonly conducted activities of boating and river based recreation, camping, fishing, hunting, hiking and backpacking, gathering of edible plants and berries, OHV use (both summer and winter), skiing, dogmushing, and other forms of recreation.

Alternative B emphasizes less motorized recreation use in a more primitive setting with experiences of solitude, escape from crowds and enjoying the smells and sounds of nature in a natural landscape. Alternative C provides for multiple recreation opportunities and experiences, while sustaining the recreation-resource base and other sensitive resource values of the subunit. Experiences available for both motorized and non-motorized users include escape from crowds, experiencing nature, and enjoying the smells and sounds of nature in a naturally appearing landscape. Alternative D offers more motorized recreation use and includes the most acreage for cross-country OHV travel. Experiences available for motorized users include experiencing

a naturally appearing landscape in a more developed setting with family or friends groups. Alternative E offers the most Backcountry of all the alternatives.

Table 4.14. Comparison of Recreation Indicators Steese Subunit

Indicator	Alternatives							
	B (acres)		C (acres)		D (acres)		E (acres)	
Special Recreation Management Area	1,246,000		1,246,000		1,246,000		1,246,000	
other BLM lands	36,000		36,000		36,000		36,000	
recreation setting character Class (acres)								
RSC Class	Steese NCA	SRMA	Steese NCA	SRMA	Steese NCA	SRMA	Steese NCA	SRMA
Primitive	1,035,000	1,035,000	3,000	3,000	3,000	3,000	3,000	3,000
Semi-Primitive	0	87,000	436,000	87,000	16,000	103,000	434,000	521,000
Backcountry	124,000	124,000	154,000	154,000	407,000	407,000	488,000	488,000
Middlecountry	0	0	452,000	452,000	608,000	609,000	120,000	120,000
Frontcountry	0	0	114,000	114,000	124,000	124,000	114,000	114,000

Semi-Primitive lands within the SRMA but outside the Steese National Conservation Area (NCA) are lands associated with Birch Creek WSR Corridor and the Birch Creek RMZ.

4.5.2.2.1. Alternative A (No Action)

Under continued management, recreation resources would be managed according to the recreation setting character settings (RSC) and on an activity basis with consideration for identifying and meeting recreation experiences. RSC settings are identified as Primitive and Semi-Primitive with little facility development. User groups tend to be small, however, there are no identified target group sizes. The major experiences and benefits managed for include escape personal pressures and crowds, experiencing nature and solitude, and enjoyment of nature. Motorized use is allowed throughout most of the Steese National Conservation Area and on all other lands within the subunit. The National Conservation Area, inclusive of Birch Creek WSR Corridor, is being managed as an SRMA. Birch Creek WSR is not considered part of the Steese National Conservation Area.

Effects from Fish and Aquatic Species

Management activities to protect fish habitat along tributaries of Birch Creek WSR including South Fork and its tributaries, Clums Fork, Sheep Creek, and Harrington Fork, will generally protect resources by restricting surface-disturbing activities. The use of special stipulations to protect crucial habitats may impact recreation by limiting or restricting development and use of these areas.

Effects from Visual Resources

Managing visual resources is an important aspect for recreation resources and experiences of naturalness. Maintaining the natural setting is a key component in each recreation management

unit. The VRM classes protect the recreation opportunities for Primitive and Semi-Primitive RMZs.

The Birch Creek WSR Corridor (69,000 acres), which is not included in the Steese National Conservation Area, is assigned VRM Class I with the objective to preserve the existing character of the landscape yet allow very limited management activities. The level of change to the characteristic landscape should be very low and must not attract attention of a casual observer. This objective allows for facilities development in protection of resources while maintaining the naturalness of the unit and protecting the experience of naturalness and the closeness of nature in a natural landscape.

The Primitive Management Unit (inclusive of Mount Prindle RNA) is assigned a VRM Class II with the objective to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This allows for some facilities development and users to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 64,000 acres are managed as VRM Class II.

The Semi-Primitive Management Units (inclusive of Big Windy RNA) are assigned a VRM Class III with an objective to partially retain the existing character of the landscape, where the level of change to the characteristic landscape can be moderate and management activities may attract the attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This allows for some facilities development and users to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 1,075,000 acres would be managed as VRM Class III.

VRM Classes are not assigned on the remaining lands (64,000 acres) outside the Steese National Conservation Area and Birch Creek WSR Corridor. Effects on visual resources are evaluated and mitigated on a project-specific basis.

Effects from Wildlife

Wildlife goals of protecting and enhancing wildlife populations and crucial habitat areas within the Steese National Conservation Area would continue to impact recreation. Healthy wildlife populations would benefit wildlife viewing, hunting and trapping activities and experiences of a closeness to nature enhanced by observing wildlife. The biggest impacts to recreation from wildlife management would be in limiting potential motorized and non-motorized recreational opportunities.

Effects from Forest and Woodland Products

Under Alternative A, personal use of timber is allowed within the Steese National Conservation Area and Birch Creek WSR Corridor (1,211,000 acres), but commercial use of timber is not. Little to no personal use of forest and woodland products has occurred within this area to date. Impacts would depend on the location, size of the area and harvest techniques used but, are assumed to be limited since personal use harvest is limited to small volumes of timber.

Effects from Land and Realty

Land use authorizations within the Steese National Conservation Area such as leases and rights-of-way could indirectly and directly impact recreation resources and experiences of naturalness and escape from crowds and pressures of life, if leases or rights-of-ways were allowed in Primitive or Semi-Primitive Management Units.

Under Alternative A, four transportation corridors have been identified within the Steese National Conservation Area. To the extent possible, rights-of-way would be limited to these corridors. The use of corridors to concentrate use would impact the recreational opportunity in the management units they are located in, but could enhance recreational opportunity in areas where no corridors exist and rights-of-way would be less likely to be authorized.

Both the Montana-Preacher Creek and the Loper Creek transportation corridors are located within a Semi-Primitive Management Unit in the North Steese National Conservation Area. These corridors would impact the naturalness of the area if developments were approved in the corridor. However, they could also provide access to some remote areas enhancing recreation opportunities by making more areas available for primitive type recreational experiences of solitude and escape from crowds. These corridors could impact up to 20,000 acres of the Semi-Primitive Management Unit, however impacts would be minimal because the Steese National Conservation Area would remain closed to new mineral entry, and subsequent development and other rights-of-ways would be unlikely.

Both the Great Unknown Creek and the Portage Creek-Buckly Bar transportation corridors are located in the South Steese National Conservation Area Unit, within the Semi-Primitive Management Unit. Both also cross Birch Creek WSR Corridor. These transportation corridors would impact the naturalness of the area if rights-of-way were authorized in the corridor. However, they could also provide access to some remote areas enhancing recreation opportunities by making more areas available for primitive type recreational experiences of solitude and escape from crowds. These corridors could impact up to 33,000 acres of the Semi-Primitive Unit, however impacts would be minimal because the Steese National Conservation Area would remain closed to new mineral entry and subsequent development and other rights-of-ways would be unlikely.

Effects from Minerals

Maintaining the closure to mineral entry and leasing on all lands within the subunit, including lands within the Steese National Conservation Area and Birch Creek WSR Corridor (1,206,000 acres) would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development.

Salable minerals such as sand and gravel would continue to be considered throughout the subunit and may impact recreation activities and experiences. Impacts would depend on the location, size and methods of mineral extraction. No known salable materials have been mined within the Steese National Conservation Area or Birch Creek WSR Corridor.

Effects from Recreation

The Steese National Conservation Area and Birch Creek WSR Corridor would continue to be managed for recreation opportunities and experiences based on the recreation setting character and managed as an SRMA but without niche decisions, management objective decisions, primary targeted outcomes, setting character decisions, and implementation framework decision. Management actions would continue to provide for multiple recreation activities within two

recreation setting character classes: 64,000 acres would be managed as Primitive and 1,075,000 acres would be managed as Semi-Primitive. Birch Creek WSR Corridor would continue to be managed as a Primitive area with winter motorized use. Facilities would continue to be built to protect resources and provide for enhancement of activities and experiences.

Lands outside the Steese National Conservation Area and Birch Creek WSR Corridor (69,000 acres) would continue to be managed for custodial actions only to reduce conflicts and protect health and safety of users. No facilities would be constructed for user comforts to enhance activities or experiences.

Effects from Travel Management

The RNAs and the Pinnell Mountain Trail are closed to all motorized use. The Primitive Management Unit (64,000 acres) in the Steese National Conservation Area is closed to summer OHV use, but allows for use of snowmobiles and aircraft. These management prescriptions would limit recreational opportunities but also enhance non-motorized experiences associated with Primitive areas, such as experiences of self-reliance, naturalness and closeness to nature and escape from crowds. These restrictions would negatively impact activities such as hunting and trapping that depend on motorized vehicles for access, and activities that benefit from motorized use such as cross-country skiing and dogmushing where vehicles are used to set trails or tracks.

The travel management prescription for the Semi-Primitive Management Unit in the Steese National Conservation Area (1,075,000 acres) allows summer and winter use of vehicles of 1,500 pounds GVWR and less and use of aircraft. User conflicts may occur and cross-country use with this size of vehicle could impact naturalness.

The Travel management prescription for Birch Creek WSR Corridor (69,000 acres) allows cross-country winter use of snowmobiles of 1,500 pounds GVWR and less and use of aircraft. It is closed to hovercraft and airboats. Recreation users may experience conflicts between different user groups.

In all management units of the Steese National Conservation Area and in Birch Creek WSR Corridor, a permit or approved plan of operation is required for any type of motorized use that exceeds the travel management prescriptions. Impacts would depend on the size of vehicle, season of travel and area of travel. If permitted, these activities could impact naturalness and solitude for users, or create conflicts between different user groups.

Outside the Steese National Conservation Area and Birch Creek WSR Corridor (64,000 acres), there are no OHV designations. Thus all forms of motorized travel are allowed. Recreation users may experience conflicts between different user groups.

Impacts from cross-country travel by OHVs would depend on vegetation, soil types and season of travel however it is foreseeable that user conflicts will increase between non-motorized users and motorized users in all areas with the allowance of year round cross-country OHV travel. Naturalness will be impacted by cross-country summer OHV travel in areas with poor soils, permafrost and with vegetation types such as tussock tundra, black spruce bogs and black and white spruce forests within riparian zones. User-created non-sustainable travel routes will impact naturalness due to the limitations of vehicles to side hill areas and the tendency of users to travel straight up or down a hill side from valley bottom to ridge line. Naturalness will be impacted by users' tendency to braid travel routes in poor soil areas. Solitude may be impacted by motorized use by users participating in non-motorized activities.

Effects from Special Designations

The management of Big Windy and Mount Prindle RNAs (3,000 acres) within the Steese National Conservation Area would continue to protect the natural process and type needs identified for each RNA and would protect recreation resources and experiences of naturalness as well as provide for hiking, climbing, hunting and the enjoyment of an undeveloped hot springs in a Primitive setting (Map 48). Some minor trail development may occur.

Birch Creek WSR (69,000 acres) would continue to be managed by the approved River Management Plan to protect and enhance the values for which it was set aside, free-flowing characteristics and water quality. Continued management would continue to enhance recreation use of the river for high quality multi-day road accessible primitive recreational float-boat experience for the experienced canoeist.

4.5.2.2.2. Alternative B

Alternative B anticipates the lowest level of resource development. Recreation experiences trend towards those dependent on undeveloped to moderately developed activities with small user groups in a natural landscape. The major experiences and benefits managed for include escape personal pressures and crowds, experiencing nature and solitude, and exploration of nature. The RSC ranges from Primitive to Backcountry.

Effects from Fish and Aquatic Species

Impacts to recreation resources by measures to protect and/or restore healthy, functioning watersheds, riparian areas, and associated fish habitats in 21 Riparian Conservation Areas (RCAs) and three High Priority Restoration Watersheds could impact recreation by requiring reclamation through active revegetation and streambank stabilization within three years for all surface-disturbing activities associated with mining. This would enhance the naturalness of previously disturbed areas. Recreation facilities would need to be designed and constructed to meet the Desired Future Conditions for aquatic habitats. Obliteration of recreation facilities would need to include reclamation of disturbed areas using appropriate active revegetation and streambank stabilization techniques. Development of recreation facilities such as trailheads and trails would most likely only impact five acres per developed area. Portions of 17 of the RCAs and portions of all three Restoration Watersheds are within the Steese National Conservation Area.

Effects from Visual Resources

Managing visual resources is an important aspect for recreation resources and experiences of naturalness. Maintaining the natural setting is a key component in every recreation opportunity setting description. Under Alternative B, VRM decisions would protect the recreation experience for both the Primitive RMZs within the Steese National Conservation Area and the Semi-Primitive Birch Creek RMZ.

The Birch Creek RMZ, Pinnell Mountain Trail RMZ, and the RNAs would be assigned VRM Class I, with the objective to preserve the existing character of the landscape yet allow very limited management activities. The level of change to the landscape should be very low and must not attract attention of a casual observer. This objective will allow for facilities development in protection of resources, while maintaining the naturalness and protecting the experience of naturalness and the closeness of nature in a natural landscape. Approximately 106,000

acres would be managed as VRM Class I, including 87,000 acres outside the Steese National Conservation Area.

The Backcountry RMZs and remaining Primitive RMZs, would be assigned a VRM Class II with an objective to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This will allow for some facilities development and small groups to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 1,139,000 acres within the Steese National Conservation Area would be managed as VRM Class II.

Visual Resource Management Class IV would be assigned to other BLM lands (45,000 acres) where the objective is to allow for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt would be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. Recreation activities based on elements of solitude and experiences of naturalness would be impacted by development of these lands from medium to large surface-disturbing activities if seen from the Foreground-Middleground Zone or from an elevated location.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristics on 1,199,000 acres would directly protect the Primitive RMZs (within the Steese National Conservation Area) and the Semi-Primitive Birch Creek RMZ where naturalness and solitude enhance the experiences and enjoyment of the sights and sounds of nature and closeness to the natural environment, and the experiences of escaping from crowds and the pressures of daily life. All of the 1,035,000 acres identified as Primitive are also identified for maintenance of wilderness characteristics (Map 74). Of the 87,000 acres identified as Semi-Primitive, 84,000 acres are also identified for maintenance of wilderness characteristics.

No areas with wilderness characteristics were identified on other BLM lands.

Effects from Wildlife

Wildlife goals of protecting and enhancing wildlife populations and crucial habitat areas within the Steese National Conservation Area would continue to impact recreation. Healthy wildlife populations would benefit wildlife viewing, hunting and trapping activities and experiences of a closeness to nature enhanced by observing wildlife.

Avoidance areas and other restrictions could impact recreational development including possible seasonal or timing closures, location, and limiting the extent of activities or development. Wildlife concerns could make projects more costly, more difficult to accomplish, or projects may not meet recreation objectives after restrictions are applied. The biggest impacts to recreation from wildlife would be in limiting potential motorized and non-motorized recreational opportunities.

The prohibition on the use of domestic goats, sheep and camelids in Dall sheep habitat could impact recreation use by users seeking to use these animals as pack animals as part of their

recreation experience. It is anticipated that this is a small user group but interest has been growing in the lower 48 states.

Effects from Forest and Woodland Products

Under Alternative B, personal use of timber, timber salvage sales, commercial sales, and commercial use of forest products would not be allowed within the Steese SRMA (1,246,000 acres of which 1,142,000 acres are in the Steese National Conservation Area). These management actions would help protect recreation resources and experiences of naturalness and closeness to nature. It is assumed that the use of forest and woodland products would be low within the Steese SRMA (Map 49). Effects under Alternative B would be similar to or lower than under Alternative A.

Personal use of timber under free-use permits, timber salvage sales, commercial sales, and commercial use of forest products would be allowed within other BLM lands (45,000 acres) where impacts to recreation experiences and opportunities would depend on the size of the area and harvest techniques used. It is assumed that the use of forest and woodland products would be low on other BLM lands within the subunit.

Effects from Land and Realty

Land use authorizations such as leases and rights-of-way could indirectly and directly impact recreation resources and experiences of naturalness and escape from crowds and pressures of life, if leases or rights-of-ways were allowed in Primitive, Semi-Primitive and Backcountry recreational opportunity spectrum settings.

Under Alternative B, two transportation corridors within the Steese National Conservation Area, have been identified. To the extent possible, all rights-of-way would be within one of these corridors. The use of corridors to concentrate use would impact the recreational opportunity spectrum settings they are located in, but could enhance other recreational opportunity spectrum settings where no corridors exist and rights-of-way would be less likely to be authorized.

The Montana-Preacher Creek transportation corridor is located within the Preacher Creek RMZ which has a Primitive recreation setting. This corridor would impact the naturalness of the area if rights-of-ways within the corridor were developed. However, it could also provide access to some remote areas enhancing recreation opportunities by making more areas available for primitive type recreational experiences of solitude and escape from crowds. This corridor could impact up to 12,000 acres of the Preacher Creek RMZ, however impacts would be minimal because the Steese SRMA would remain closed to mineral entry and subsequent development and other rights-of-ways would be unlikely.

The Great Unknown Creek transportation corridor is located in the Harrison RMZ with a Backcountry recreation setting, Birch Creek RMZ with a Semi-Primitive setting, and the Wolf Creek RMZ with a Primitive setting. The Backcountry Zone allows for development of facilities as long as they blend with the surrounding landscape. Allowing development within this zone would enhance recreation experiences by providing access. Development of facilities within Semi-Primitive Zone would impact the naturalness of the area, but could be allowed if they are designed to blend with the surrounding landscape. Development of facilities within the Primitive Zone would impact the naturalness of the area; however it could also provide access to remote areas enhancing recreation opportunities by making areas available for primitive type recreation experiences of solitude, escape from crowds and pressures of life, and small groups of generally

three or less. This corridor could impact approximately 12,000 acres of the Backcountry Harrison Creek RMZ, 3,000 acres of the Birch Creek RMZ and 3,000 acres of the Primitive Wolf Creek RMZ, however impacts would be low because the Steese SRMA would remain closed to mineral entry and subsequent development and few rights-of-ways are anticipated in these areas.

Identifying the Steese ACEC and the Research Natural Areas, both within the Steese National Conservation Area, and Birch Creek WSR Corridor (except in the identified transportation corridor) as right-of-way avoidance areas would protect recreation resources and experiences of naturalness on approximately 1,182,000 acres within the Preacher Creek and Wolf Creek Primitive RMZs, Birch Creek Semi-Primitive RMZ and Harrison Backcountry RMZ.

Maintaining the ANILCA withdrawal from locatable mineral entry for the Steese National Conservation Area would enhance the naturalness experience in the all RMZs by not allowing surface disturbance activities associated with mineral development on 1,246,000 acres.

Portions of Birch Creek, Pinnell Mountain and Preacher Creek RMZs would be closed to locatable minerals (18,000 acres). These lands are outside the Steese National Conservation Area and Birch Creek WSR Corridor but are adjacent to these units and the closer would enhance the naturalness experience by not allowing surface disturbance activities associated with mineral development.

Effects from Minerals

Closing the entire Steese SRMA (1,245,000 acres) to leasable minerals, locatable minerals and salable minerals would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development. Seismic exploration activities could impact recreation by improving winter access through the clearing of seismic lines. Impacts to naturalness could occur through the clearing of lines for both summer and winter recreation and the experience of escape from crowds would be impacted during seismic operations.

Valid existing mining claims located within Primitive and Backcountry recreational opportunity spectrum setting classes, both within the Steese National Conservation Area, would impact the naturalness of the area and the experience of escape from crowds. Continued mining on 5,000 acres of existing claims would impact recreation under this alternative.

Other BLM lands would be open to fluid and solid mineral leasing, locatable and salable minerals impacting recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Recreation

Management actions would provide for multiple recreation activities within three recreation setting character settings. 1,035,000 acres would be managed as Primitive in the Preacher Creek, Wolf Creek, Mount Prindle RNA, Big Windy RNA, and Pinnell Mountain RMZs, all within the Steese National Conservation Area. 87,000 acres would be managed as Semi-Primitive in the Birch Creek RMZ while 124,000 acres would be managed as Backcountry in the Harrison RMZ (within the National Conservation Area).

At eighty-three percent the Primitive RMZ accounts for the largest setting, while Semi-Primitive accounts for seven percent (Birch Creek WSR) and the Backcountry RMZ accounts for ten percent. These percentages are indicative of the management emphasis for recreation activities on BLM-managed lands within the subunit and the Steese National Conservation Area. Much of

the SRMA would be managed for the primitive experiences, minimal facilities development for resource protection and small user groups generally of less than three persons. These settings would protect and enhance the experiences of naturalness, escape from crowds and solitude. Semi-Primitive areas would be managed for winter motorized use, rustic and rudimentary facilities development generally constructed using natural materials, and designed to blend with surrounding landscape and small user groups generally of four or fewer persons. Backcountry experiences of motorized use, with small facilities development (approximately three acres for each site developed) generally constructed using naturally appearing materials, and designed to blend with surrounding landscape to support user groups of up to seven people average.

Other BLM lands would not be managed under a recreation setting character setting and would not be managed for an identified range of experiences or activities.

Effects from Travel Management

The Primitive Zones of Preacher Creek, Wolf Creek, and Pinnell Mountain RMZs (all within the Steese National Conservation Area) would be open to non-motorized travel, winter snowmobile travel (1,000 pounds or less curb weight and 50 inches or less width) and aircraft landings without clearing of vegetation, limiting recreational opportunities but enhancing self-reliance, naturalness and closeness to nature and escape from crowds. The RNAs (Mount Prindle RNA, Big Windy RNA) would be managed for non-motorized travel. A permit or approved plan of operation for all forms of OHV (including clearing of vegetation for aircraft landings) use would be required in the Primitive Zones. If permitted, these activities could impact naturalness and solitude for users and the impacts would depend on the size of vehicle, route and season of travel. Closure of 1,034,000 acres (eighty-three percent of the SRMA) to summer OHV use would negatively impact activities such as hunting and trapping that depend on motorized vehicles for access.

The Semi-Primitive Birch Creek RMZ (87,000 acres) and the Backcountry Harrison RMZ (124,000 acres) within the Steese National Conservation Area, would be open to winter use of snowmobiles of 1,000 pounds curb weight and less and 50 inches or less width, limiting recreational opportunities to non-motorized summer OHV access while allowing aircraft landing and motorboats and winter motorized use. Recreation experiences include self-reliance, naturalness and closeness to nature and escape from crowds with minimal facilities. The closure of these areas to summer OHV use would negatively impact motorized assisted activities such as hunting. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users. A permit or approved plan of operation would be required for all other forms of OHV use. If permitted, these activities could impact naturalness and solitude for users. Effects would depend on the size of vehicle, route and season of travel.

Within the Birch Creek WSR Corridor and the Steese National Conservation Area, the use of hovercraft, airboats and personal water craft would not be allowed on BLM determined non-navigable section within the Steese National Conservation Area. The Birch Creek WSR management plan would be amended to allow summer OHV cross-country travel by federally qualified subsistence users (thirty—five percent of the Alaska population) using OHVs equal to or less than 1,000 pound vehicle curb weight with a permit. Opening the river corridor to summer motorized OHV use by federally qualified subsistence users could impact essentially primitive watersheds and shorelines, water quality and the Outstandingly Remarkable Values of scenic and recreation through the development of user-created non-sustainable travel routes. User conflicts may be expected if subsistence access is granted for OHV while restrictions exist for casual users. Impacts would be most likely during hunting season.

Other BLM lands (45,000 acres) would be open to winter use of snowmobiles of 1,000 pounds curb weight and less with a width of 50 inches or less limiting recreational opportunities to non-motorized summer access, while allowing winter motorized use. Recreation users may experience conflicts between different user groups. Aircraft use would be unrestricted and this may directly and indirectly impact users. A permit or approved plan of operation would be required for all other forms of OHV use. If permitted these activities could create conflicts between different user groups. Effects would depend on the size of vehicle, route, and season of travel.

Effects from Special Designations

Designation of 927,000 acres within the Steese National Conservation Area as the Steese ACEC (Map 64) with restrictions and limitations of resource development would protect recreation resources and experiences of naturalness in all underlying RSC settings. Impacts to recreation use may occur if restrictions are placed on facilities development and use in order to maintain caribou and Dall sheep habitat in all RSC settings underlying important habitat.

The management of Big Windy and Mount Prindle RNAs, within the Steese National Conservation Area (Map 64) to protect the natural process and type needs identified for each, would protect recreation resources and experiences of naturalness and a closeness to the sights and sounds of nature in these areas identified as Primitive under the RSC. Prohibiting camping associated with recreational activities within the boundaries of the RNAs would impact recreation experiences by not allowing users to camp in close proximity to the area of activity, increasing travel time and the possible creation of unsustainable social routes as people hike over the same route to access climbing areas and enjoy hot spring areas.

One additional river segment, Big Windy Creek, totaling 14 miles within the Steese National Conservation Area, would be recommended for designation to the National Wild and Scenic Rivers System as a “wild” river (Map 74). The designation of this river by Congress would ensure the protection and enhancement of the outstandingly remarkable scenic, wildlife, and geologic values for which the river was identified, providing long-term, benefits to recreation experiences of naturalness and a closeness to the sights and sounds of nature on 4,500 acres.

Effects from management of Birch Creek WSR would be the same as Alternative A.

4.5.2.2.3. Alternative C

In general, Alternative C anticipates a moderate level of resource development. Recreation experiences trend towards those dependent on moderately developed activities with medium sized user groups in a naturally appearing landscape. The major experiences and benefits managed for include escape personal pressures and crowds, experiencing nature and solitude, and exploration of nature. The RSC ranges from Primitive to Frontcountry.

Effects from Fish and Aquatic Species

Effects would be similar to Alternative B. However, only 18 RCAs and three High Priority Restoration Watersheds would be identified. Portions of 15 of the RCAs and portions of all three Restoration Watersheds are located within the Steese National Conservation Area. Impacts to recreation would occur if these are applied in Backcountry, Middlecountry and Frontcountry RSC settings where development of recreation facilities would most likely occur, and users want to enjoy riparian areas and want developed access to water sources. Development of recreation

facilities such as campgrounds, trailheads, and trails would most likely only impact five acres per developed area.

Effects from Visual Resources

As in Alternative B, managing visual resources is important for maintaining naturalness, and maintaining the natural setting is a key component in every recreation opportunity setting description. Under Alternative C, the VRM decisions would protect the recreation experience for Birch Creek WSR Corridor and the Primitive RMZs within the Steese National Conservation Area, with an assigned VRM Class I objective to preserve the existing character of the landscape yet allow very limited management activities. The level of change to the landscape should be very low and must not attract attention of a casual observer. This objective will allow for facilities development in protection of resources while maintaining the naturalness of the zones and protecting the experience of naturalness and the closeness of nature in a natural landscape. Approximately 102,000 acres would be managed as VRM Class I, including 87,000 acres outside the National Conservation Area.

The Semi-Primitive RMZs within the Steese National Conservation Area (other than Birch Creek RMZ), Backcountry RMZs, and lands with wilderness characteristics would be assigned a VRM Class II with an objective to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This would allow for some facilities development and small groups to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 578,000 acres in the Steese National Conservation Area would be managed as VRM Class II.

Visual Resource Management Class IV would be assigned to Middlecountry and Frontcountry RMZs (within the Steese National Conservation Area), and other BLM lands where the objective is to allow for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. Every attempt would be made, however, to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements. Recreation activities based on elements of solitude and experiences of naturalness would be impacted by development of these lands, from medium to large surface-disturbing activities, if visible from the Foreground-Middleground Zone or from an elevated location. Approximately 611,000 acres, including 566,000 acres in the Steese National Conservation Area, would be managed as VRM Class IV.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristics on 647,000 acres would directly protect the Primitive and Semi-Primitive RMZs where naturalness and solitude enhance the experiences and enjoyment of the sights and sounds of nature and closeness to the natural environment, and the experiences of escaping from crowds and the pressures of daily life. All of the 3,000 acres identified as Primitive are also identified for maintenance of wilderness characteristics. Of the 523,000 acres identified as Semi-Primitive, 479,000 acres are also identified for maintenance of wilderness characteristics, including lands within the Birch Creek WSR Corridor. Maintenance of wilderness characteristics in the Backcountry RMZ would protect naturalness and solitude but may limit the development of recreation facilities on 154,000 acres. Approximately 578,000 acres of lands with wilderness characteristics are within the Steese National Conservation Area.

Effects from Wildlife

Under Alternative C, the effects from Wildlife Management would essentially be the same as Alternative B, except the use of domestic goats, sheep and camelids in Dall sheep habitat would be allowed. It is anticipated that this is a small user group but interest has been growing in the lower 48 states.

Effects from Forest and Woodland Products

Under Alternative C, personal use of timber, commercial timber sales, and commercial use of forest products would be allowed on 1,156,000 acres within the SRMA, including most of the Steese National Conservation Area. These management actions could impact recreation resources and experiences of naturalness and closeness to nature in Semi-Primitive and Backcountry Zones. In Middlecountry and Frontcountry Zones, impacts would be less due to the more developed nature of these settings. Impacts would depend on the size of the area and harvest techniques used, but would likely be limited in scope, due to lack of valuable timber and lack of demand.

Timber salvage sales could be considered on 1,245,000 acres within the SRMA, with impacts dependent on the location, size of the area and harvest techniques used. It is assumed that demand for salvage sales would be low and impacts would be correspondingly low.

Personal use of timber, timber salvage sales, commercial timber sales, and commercial use of forest products would be allowed within other BLM lands where impacts to recreation experiences and opportunities would depend on the size of the area and harvest techniques used. It is assumed that the use of forest and woodland products would be low on other BLM lands and thus impacts would also be low.

Effects from Land and Realty

Land use authorizations such as leases and rights-of-way could indirectly and directly impact recreation resources and experiences of naturalness and escape from crowds and pressures of life if leases or rights-of-ways were allowed in Primitive, Semi-Primitive and Backcountry recreational opportunity spectrum settings (679,000 acres of which 87,000 acres are outside the Steese National Conservation Area).

Two transportation corridors within the Steese National Conservation Area are identified under this alternative. To the extent possible, all rights-of-way would be limited to these corridors. The use of corridors to concentrate use would impact the recreational opportunity spectrum settings they are located within, but would enhance other recreational opportunity spectrum settings where no corridors exist and rights-of-way may proliferate.

The Montana-Preacher Creek corridor is located within the Middlecountry Preacher Creek RMZ. The corridor would impact the naturalness of the area if it were developed. However; it could also provide access to some remote areas enhancing recreation opportunities by making more areas available for primitive type recreational experiences of solitude and escape from crowds. The corridor could impact up to 10,000 acres of the Preacher Creek RMZ, however impacts would be minimal because the Steese SRMA would remain closed to mineral entry and rights-of-ways associated with mining would be limited.

The Great Unknown Creek corridor is located in the Frontcountry Harrison RMZ, the Semi-Primitive Birch Creek RMZ, and the Middlecountry Clums Fork RMZ. The Middlecountry prescription allows for development of facilities as long as they blend with the surrounding

landscape. Allowing development within this zone would enhance recreation experiences by providing access. Development of facilities within Semi-Primitive Zone would impact the naturalness of the area, but are allowed if they are designed to blend with the surrounding landscape. Other restrictions may apply due to the “wild” river designation. Within the Frontcountry prescription, development of facilities are generally allowed because they enhance recreation opportunities, making areas available for recreation experiences with family and small groups yet allowing for experiences of nature and the escape from crowds and pressures of life. The transportation corridor could impact up to 12,000 acres of the Harrison Creek RMZ, 3,000 acres of the Birch Creek RMZ and 3,000 acres of the Clums Fork RMZ.

Maintaining the ANILCA withdrawal from locatable mineral entry on lands within Big Windy and Mount Prindle RNAs, Birch Creek, Pinnell Mountain, Wolf Creek, Rock Creek and Rocky Mountains RMZs, the Steese ACEC, the Bachelor Creek section of Preacher Creek RMZ, all Riparian Conservation Areas and 1,500 acres of Harrison Creek would enhance the naturalness experience in these areas by not allowing surface disturbance activities associated with mineral development on 955,000 acres all within the Steese National Conservation Area.

Portions of Birch Creek, Pinnell Mountain and Preacher Creek RMZs would be closed to locatable minerals (18,000 acres). These lands are outside the Steese National Conservation Area and Birch Creek WSR Corridor but are adjacent to these units and the closer would enhance the naturalness experience by not allowing surface disturbance activities associated with mineral development.

Effects from Minerals

Closing 992,000 acres to fluid leasable minerals and solid leasable minerals, and locatable minerals would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development in the Primitive, Semi-Primitive (87,000 acres within the Birch Creek WSR Corridor), and Backcountry recreational opportunity spectrum settings, the Steese ACEC and the Bachelor Creek portion of Preacher Creek RMZ. The recreation settings would be protected on 751,000 acres within the Steese National Conservation Area. An additional 172,000 acres would be open to fluid and solid leasable minerals with minor constraints, however these constraints would have little impacts to recreational experiences and naturalness.

Seismic exploration activities could impact recreation by improving winter access through the clearing of seismic lines. Impacts to naturalness could occur through the clearing of lines for both summer and winter recreation and the experience of escape from crowds would be impacted during seismic operations.

Closing 69,000 acres to salable minerals would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development in the Birch Creek RMZ. The remainder of the SRMA would be open to salable minerals. Impacts recreation resources and experiences of naturalness and escape from crowds would depend on the access, location, and size. It is anticipated that demand for mineral materials in the Steese Subunit would be met from sources on state land and that most sales would be located close to roads. No new mineral sales on BLM lands are anticipated.

Other BLM lands would be open to leasable, locatable and salable minerals, impacting recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Recreation

Management actions would provide for multiple recreation activities within five Zones. The Mount Prindle and Big Windy RNAs (3,000 acres) would be managed as Primitive, all within the Steese National Conservation Area. The Rock Creek, Wolf Creek, Birch Creek and Pinnell Mountain RMZs (523,000 acres) would be managed as Semi-Primitive, all within the Steese National Conservation Area except 99,000 acres of the Birch Creek RMZ. The Rocky Mountain Uplands RMZ (154,000 acres) would be managed as Backcountry, also within the Steese National Conservation Area. The Preacher Creek and Clums RMZs, would be managed as Middlecountry (452,000 acres), the Harrison RMZ (114,000 acres) would be managed as Frontcountry, all within the Steese National Conservation Area.

The Primitive Zone (less than one percent) accounts for the smallest setting, while Semi-Primitive accounts for forty-two percent. The Backcountry zone accounts for twelve percent. The Middlecountry Zone accounts for thirty-six percent and Frontcountry accounts for nine percent.

These percentages are indicative of the management emphasis for recreation activities on BLM-managed lands within the subunit. Less than one percent of the SRMA would be managed for the Primitive experiences, minimal facilities development for resource protection and small user groups generally of three or fewer persons. This setting would protect and enhance the experiences of naturalness, escape from crowds and solitude. Semi-Primitive areas would be managed for winter motorized use, rustic and rudimentary facilities development generally constructed using natural materials, and designed to blend with surrounding landscape and small user groups generally of four or fewer persons. Backcountry experiences of motorized use, with small facilities development (approximately three acres) generally constructed using naturally appearing materials, and designed to blend with surrounding landscape to support user groups of up to seven people average. Middlecountry is the second largest setting and would be managed for cross-country winter use and summer motorized use on designated routes, some development of medium sized facilities (generally less than five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 10 people average with more developed facilities. The Frontcountry setting would be managed for cross-country winter and summer motorized use on designated routes, some development of larger sized facilities (over five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 12 people average with more developed facilities.

Other BLM lands would not be managed under a recreation setting character setting and would not be managed for an identified range of experiences or activities.

Effects from Travel Management

Travel management prescriptions for the Primitive Zones of Mount Prindle and Big Windy RNAs would allow non-motorized travel and aircraft landings without clearing of vegetation, limiting recreational opportunities but enhancing self-reliance, naturalness and closeness to nature and escape from crowds. A permit or approved plan of operation would be required for all forms of OHV use (including clearing of vegetation for aircraft landings), which could impact naturalness and solitude for users. Impacts would depend on the size of vehicle, route and season of travel. Closure of these areas (3,000 acres) to OHV use would negatively impact activities such as hunting and trapping that depend on motorized vehicles for access, and activities that

benefit from motorized use such as cross-country skiing and dogmushing where vehicles are used to set trails or tracks.

Travel management prescriptions for the Semi-Primitive Zones of Birch Creek, Pinnell Mountain, Rock Creek and Wolf Creek RMZs, and the Backcountry Rocky Mountain Uplands RMZ, would allow winter use of snowmobiles of 1,000 pounds curb weight and less and 50 inches or less in width, limiting recreational opportunities to non-motorized summer OHV access, while allowing winter motorized use and motorboats. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users. A permit or approved plan of operation would be required for all other forms of OHV use. If permitted, these activities could impact naturalness and solitude for users and would depend on the size of vehicle, route and season of travel. Closure of 680,000 acres in these areas to summer OHV use would negatively impact motorized assisted activities such as hunting. All of these areas except 99,000 acres of the Birch Creek RMZ are located within the Steese National Conservation Area.

Within the Birch Creek WSR Corridor and the Steese National Conservation Area, the use of hovercraft, airboats and personal water craft would not be allowed. above the confluence of Birch Creek and the South Fork of the Yukon Fork of Birch Creek.

The Middlecountry Zones of Preacher Creek and Clums RMZs, and the Frontcountry Harrison RMZ would be open to cross-country winter use of snowmobiles of 1,000 pounds curb weight and less with a width of 50 inches or less, and summer use of vehicles 1,000 pounds curb weight and less and a width of 50 inches or less on existing routes only, except for game retrieval. These management actions would limit recreational opportunities for cross-country summer travel. Recreation users may experience conflicts between different user groups. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users. A permit or approved plan of operation would be required for all other forms of OHV use. Impacts would depend of the size of vehicle, season of travel and area of travel. If permitted these activities could create conflicts between different user groups. Restricting summer use to existing routes would negatively impact summer motorized activities such as hunting and free riding on 566,000 acres.

Other BLM lands (45,000 acres) would be open to winter use of snowmobiles of 1,000 pounds curb weight and less with a width of 50 inches or less, and summer use of vehicles with a 1,000 pounds curb weight and less with a width of 50 inches or less on existing routes only, except for game retrieval. This prescription would limit recreational opportunities such as hunting and free riding. Recreation users may experiences conflicts between different user groups. Aircraft use would be unrestricted and this may directly and indirectly impact users. A permit or approved plan of operation would be required for all other forms of OHV use. Impacts would depend of the size of vehicle, season of travel and area of travel. If permitted these activities could create conflicts between different user groups.

Effects from Special Designations

Designation of 460,000 acres as the Steese ACEC (Map 66) with restrictions and limitations of resource development would protect recreation resources and experiences of naturalness in all underlying RSC settings. All of the Steese ACEC is within the Steese National Conservation Area. Impacts to recreation use may occur if restrictions are placed on facilities development and use in order to maintain caribou and Dall sheep habitat and mineral licks in all RSC settings underlying important habitat and mineral licks sites.

The management of Big Windy and Mount Prindle RNAs (3,000 acres) within the Steese National Conservation Area, to protect the natural process and type needs identified for each RNA, would protect recreation resources and experiences of naturalness and a closeness to the sights and sounds of nature in these areas which are identified as Primitive (Map 65). Allowing camping associated with recreational activities within the RNAs would enhance recreation experiences by allowing users to camp in close proximity to the area of activity, some short unsustainable social routes may develop as people hike over the same route to access climbing areas and enjoy hot spring areas.

Effects from management of Birch Creek WSR would be the same as Alternative A.

4.5.2.2.4. Alternative D

In general, Alternative D anticipates the most resource development. Recreation experiences trend towards those dependent on more developed activities with larger sized user groups in a naturally appearing landscape. The major experiences and benefits managed for include escape personal pressures and crowds, experiencing nature, and exploration of nature. The RSC ranges from Primitive to Frontcountry.

Effects from Fish and Aquatic Species

Effects would be similar to Alternatives B and C, but less since only eight RCAs and three High Priority Restoration Watersheds are identified. Portions of seven of the RCAs and portions of all three Restoration Watersheds are located within the Steese National Conservation Area. Impacts to recreation would occur if these are applied in Middlecountry and Frontcountry RSC settings, where development of recreation facilities would most likely occur, and where users want to enjoy riparian areas and want developed access to water sources. Development of recreation facilities such as campgrounds, trailheads, and trails would most likely only impact five acres per developed area.

Effects from Visual Resources

As in Alternative B, managing visual resources is important for maintaining naturalness, and maintaining the natural setting is a key component in every recreation opportunity setting description. Under Alternative D, VRM decisions would protect the recreation experience for the Birch Creek RMZ and Primitive RMZs with an assigned VRM Class I objective to preserve the existing character of the landscape yet allow very limited management activities. The level of change to the characteristic landscape should be very low and must not attract attention of a casual observer. This objective would allow for facilities development in protection of resources while maintaining the naturalness of the zones and protecting the experience of naturalness and the closeness of nature in a natural landscape. Approximately 90,000 acres would be managed as VRM Class I, including 87,000 acres outside the Steese National Conservation Area.

The Semi-Primitive RMZs and Backcountry RMZs would be assigned a VRM Class II with an objective to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This would allow for some facilities development and small groups to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 423,000 acres in the Steese National Conservation Area would be managed as VRM Class II.

No RMZs would be assigned a VRM Class III.

Visual Resource Management Class IV would be assigned to Middlecountry and Frontcountry RMZs and other BLM lands where the objective is to allow for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt would be made to minimize the impacts through careful location, minimal disturbance, and repeating the basic elements. Recreation activities based on elements of solitude and experiences of naturalness would be impacted by development of these lands from medium to large surface-disturbing activities if visible from the Foreground-Middleground Zone or from an elevated location. Approximately 778,000 acres, including 733,000 acres in the Steese National Conservation Area, would be managed as VRM Class IV.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristics on 483,000 acres, all within the Steese National Conservation Area, would directly protect Primitive and Semi-Primitive RMZs where naturalness and solitude enhance the experiences and enjoyment of the sights and sounds of nature and closeness to the natural environment, and the experiences of escaping from crowds and the pressures of daily life. Of the 3,000 acres identified as Primitive, one-hundred percent is identified for maintenance of wilderness characteristics. Of the 103,000 acres identified as Semi-Primitive, 71,000 acres are identified for maintenance of wilderness characteristics. Additionally, wilderness characteristics would be maintained in the Wolf Creek Backcountry RMZ (325,000 acres). Maintenance of wilderness characteristics in the Backcountry RMZ would protect naturalness and solitude but may limit the development of recreation facilities on 407,000 acres. Approximately 483,000 acres of lands with wilderness characteristics are within the Steese National Conservation Area.

No areas with wilderness characteristics were identified on other BLM lands.

Effects from Wildlife

Same as Alternative C.

Effects from Forest and Woodland Products

Effects under Alternative D would be similar to Alternative C. The primary difference is that personal of timber products would be considered in a larger area (1,245,000 acres), including the Birch Creek WSR Corridor and the RNAs. Commercial timber sales would be allowed on 1,156,000 acres within the SRMA (excludes the Birch Creek WSR Corridor and the RNAs). These management actions could impact recreation resources and experiences of naturalness and closeness to nature in Semi-Primitive and Backcountry Zones. Impacts would depend on the location, size of the area and harvest techniques used.

Effects from the commercial use of forest products in the SRMA would be the same as Alternative C. Effects from harvest of forest and woodland products on other BLM lands would also be the same as Alternative C.

Effects from Land and Realty

Land use authorizations such as leases and rights-of-way could indirectly and directly impact recreation resources and experiences of naturalness and escape from crowds and pressures of life if allowed in Primitive, Semi-Primitive and Backcountry recreational opportunity spectrum settings. Impacts would depend on the size of the project, use, and associated facilities. No right-of-way avoidance areas or transportation corridors are identified.

Portions of Birch Creek and Pinnell Mountain RMZs would be closed to locatable minerals (17,000 acres). These lands are outside the Steese National Conservation Area and Birch Creek WSR Corridor but are adjacent to these units and the closure would enhance the naturalness experience by not allowing surface disturbance activities associated with mineral development.

Effects from Minerals

Closing 583,000 acres to leasable and locatable minerals would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development in the Primitive, Semi-Primitive, and Backcountry recreational opportunity spectrum settings, the Steese ACEC and the Bachelor Creek portion of Preacher Creek RMZ. Of the closed acres, all but 87,000 acres associated with Birch Creek WSR Corridor and 2,000 acres of other lands are located inside the Steese National Conservation Area.

Seismic exploration activities could impact recreation by improving winter access through the clearing of seismic lines. Impacts to naturalness could occur through the clearing of lines for both summer and winter recreation and the experience of escape from crowds would be impacted during seismic operations throughout the subunit including the Steese National Conservation Area.

The entire SRMA (1,246,000 acres) including the Steese National Conservation Area, would be open to salable minerals. Impacts to recreation resources and experiences of naturalness and escape from crowds would depend on the access, location, and size. It is anticipated that demand for mineral materials in the Steese Subunit would be met from sources on state land and that most sales would be located close to roads. No new mineral sales on BLM lands are anticipated.

All other BLM lands would be open to fluid and solid mineral leasing, locatable and salable minerals impacting recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Recreation

Management actions would provide for multiple recreation activities within five recreation setting character settings. The Mount Prindle and Big Windy RNAs (3,000 acres) would be managed as Primitive, both within the Steese National Conservation Area. The Birch Creek and Pinnell Mountain RMZs (104,000 acres of which 87,000 acres are outside the National Conservation Area) would be managed as Semi-Primitive. The Rocky Mountain Uplands and Wolf Creek RMZs (407,000 acres) would be managed as Backcountry, both within the Steese National Conservation Area. The Preacher Creek and Clums RMZs (608,000) acres would be managed as Middlecountry and the Harrison RMZ (124,000 acres) would be managed as Frontcountry, all within the Steese National Conservation Area.

The Primitive RMZ (less than one percent) accounts for the smallest setting, while Semi-Primitive accounts for eight percent. The Backcountry RMZ accounts for thirty-three percent. The Middlecountry RMZ accounts for forty-nine percent, while Frontcountry accounts for ten percent.

These percentages are indicative of the management emphasis for recreation activities on BLM-managed lands within the subunit. Less than one percent of the SRMA would be managed for the primitive experiences, minimal facilities development for resource protection and small user groups generally of three or fewer persons. This setting would protect and enhance the experiences of naturalness, escape from crowds and solitude. Semi-Primitive areas (eight percent) would be managed for winter motorized use, rustic and rudimentary facilities development generally constructed using natural materials, and designed to blend with surrounding landscape and small user groups generally of four or fewer persons. Backcountry experiences of motorized use, with small facilities development (approximately three acres) generally constructed using naturally appearing materials, and designed to blend with surrounding landscape to support user groups of up to seven people average. Middlecountry is the largest setting (forty-nine percent) and would be managed for cross-country winter use and summer motorized use on designated routes, some development of medium sized facilities (generally less than five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 10 people average with more developed facilities. The Frontcountry setting would be managed for cross-country winter and summer motorized use on designated routes, some development of larger sized facilities (over five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 12 people average with more developed facilities.

Other BLM lands would not be managed under a recreation setting character setting and would not be managed for an identified range of experiences or activities.

Effects from Travel Management

The Primitive Mount Prindle and Big Windy RNAs, both within the Steese National Conservation Area, would be open to non-motorized travel and aircraft landings without clearing of vegetation, limiting recreational opportunities but enhancing self-reliance, naturalness and closeness to nature and escape from crowds. A permit or approved plan of operation would be required for all forms of OHV use (including clearing of vegetation for aircraft landings). If permitted, these activities could impact naturalness and solitude for users. Impacts would depend on the size of vehicle, route and season of travel. Closure of 3,000 acres in these areas to OHV use would negatively impact activities such as hunting and trapping that depend on motorized vehicles for access, and activities that benefit from motorized use such as cross-country skiing and dogmushing where vehicles are used to set trails or tracks.

The Semi-Primitive Zones of Birch Creek (87,000 acres outside the Steese National Conservation Area) and Pinnell Mountain RMZs, and the Backcountry Zones of Rocky Mountain Uplands and Wolf Creek RMZs, would be open to winter use of snowmobiles of 1,000 pounds curb weight and less with a width of 50 inches or less limiting recreational opportunities to non-motorized OHV summer access, while allowing winter motorized use and motorboats. A permit or approved plan of operation would be required for all other forms of OHV use. If permitted, these activities could impact naturalness and solitude for users and would depend on the size of vehicle, route and season of travel. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users. Closure of 510,000 acres to summer OHV use would negatively impact motorized assisted activities such as hunting.

Within the Birch Creek WSR Corridor and the Steese National Conservation Area, the use of hovercraft, airboats and personal water craft would not be allowed. Motorized boats would

not be allowed above the confluence of Birch Creek and the South Fork of the Yukon Fork of Birch Creek.

The Middlecountry Preacher Creek and Clums RMZs and the Frontcountry Harrison RMZ, all within the Steese National Conservation Area, would be open cross-country winter and summer use of vehicles of 1,000 pounds curb weight and less, allowing for both summer and winter motorized use off of existing routes on 733,000 acres. Recreation users may experience conflicts between different user groups. A permit or approved plan of operation would be required for all other forms of OHV use and impacts would depend of the size of vehicle, season of travel and area of travel. If permitted these activities could create conflicts between different user groups. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users.

Other BLM lands (45,000 acres) would be open to cross-country winter and summer use of vehicles of 1,000 pounds curb weight and less, allowing for free travel for recreational activities such as hunting, trapping and free riding. Effects would be similar to the Middlecountry and Frontcountry Zones.

Effects from Special Designations

Designation of 193,000 acres as the Steese ACEC (Map 67), all within the Steese National Conservation Area, with restrictions and limitations of resource development would protect recreation resources and experiences of naturalness in all underlying RSC settings. Impacts to recreation use may occur if restrictions are placed on facilities development and use in order to maintain caribou and Dall sheep habitat and mineral licks in all RSC settings underlying important habitat and ungulate mineral lick sites.

Effects from RNAs would be the same as Alternative C. Effects from management of Birch Creek WSR would be the same as Alternative A.

4.5.2.2.5. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs of all the alternatives. Under this alternative recreation experiences trend towards those dependent on more rustic activities with smaller sized user groups in a naturally appearing landscape. The major experiences and benefits managed for include escape personal pressures and crowds, experiencing nature, and exploration of nature. The RSC ranges from Primitive to Frontcountry.

Effects from Fish and Aquatic Species

Effects would be similar to Alternative B with twenty-one RCAs and four High Priority Restoration Watersheds are identified. Portions of eighteen of the RCAs and portions of all four Restoration Watersheds are located within the Steese National Conservation Area. Impacts to recreation would occur if these are applied in Middlecountry and Frontcountry RSC settings, where development of recreation facilities would most likely occur, and where users want to enjoy riparian areas and want developed access to water sources. Development of recreation facilities such as campgrounds, trailheads, and trails would most likely only impact five acres per developed area.

Effects from Visual Resources

Managing visual resources is important for maintaining naturalness, and maintaining the natural setting is a key component in every recreation opportunity setting description. Under Alternative E, VRM decisions would protect the recreation experience for the Birch Creek RMZ and Primitive RMZs with an assigned VRM Class I objective to preserve the existing character of the landscape yet allow very limited management activities. The level of change to the characteristic landscape should be very low and must not attract attention of a casual observer. This objective would allow for facilities development in protection of resources while maintaining the naturalness of the zones and protecting the experience of naturalness and the closeness of nature in a natural landscape. Approximately 103,000 acres would be managed as VRM Class I, including 87,000 acres outside the Steese National Conservation Area.

The Wolf Creek RMZ (Semi-Primitive), Preacher Creek RMZ and the Pinnell Mountain RMZ (Backcountry) would be assigned a VRM Class II with an objective to retain the existing character of the landscape where the level of change to the characteristic landscape should be low and management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. This would allow for some facilities development and small groups to enjoy the natural sights and sounds of nature in a naturally appearing landscape. Approximately 909,000 acres in the Steese National Conservation Area would be managed as VRM Class II.

No RMZs would be assigned a VRM Class III.

Visual Resource Management Class IV would be assigned to Bachelor Creek and Clums RMZs (Middlecountry) and Harrison RMZ (Frontcountry) and other BLM lands where the objective is to allow for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt would be made to minimize the impacts through careful location, minimal disturbance, and repeating the basic elements. Recreation activities based on elements of solitude and experiences of naturalness would be impacted by development of these lands from medium to large surface-disturbing activities if visible from the Foreground-Middleground Zone or from an elevated location. Approximately 260,000 acres, including 234,000 acres in the Steese National Conservation Area, would be managed as VRM Class IV.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple use. Wilderness characteristics would be maintained on 1,009,000 acres, or eighty percent of lands having wilderness characteristics, by limiting activities that impact wilderness characteristics of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation. OHV use would be allowed on all lands subject to weight limits. The remaining 249,000 acres (twenty percent) would be managed for other resources as priority over protecting wilderness characteristics.

No areas with wilderness characteristics were identified on other BLM lands.

Effects from Wildlife

Under Alternative E, the effects from Wildlife Management would essentially be the same as Alternative B, except the use of OHVs for cross-country travel would be allowed unless that use

interferes with free movement of caribou within the caribou migration corridor. Protection of the caribou migration corridor may have greater impacts on the development of recreation facilities, especially linear trails or roads within portions of Bachelor Creek and Clums (Middlecountry), Pinnell Mountain, Birch Creek and Wolf (Semi-Primitive) and Harrison (Frontcountry) RMZs.

Designation of 457,000 acres as crucial caribou and Dall sheep habitat (Map 67), all within the Steese National Conservation Area, with restrictions and limitations of resource development would protect recreation resources and experiences of naturalness in all underlying RSC settings. Impacts to recreation use may occur if restrictions are placed on facilities development and use in order to maintain crucial caribou and Dall sheep habitat and mineral licks in all RSC settings underlying important habitat and ungulate mineral lick sites. Crucial caribou and Dall sheep habitat is closed to cross-country summer OHV travel, except by permit. Where crucial caribou and Dall sheep habitat overlaps with RMZs, the closure will apply. This impacts thirty-seven percent of the SRMA, within portions of Bachelor Creek, Pinnell Mountain, Preacher Creek and Wolf Creek RMZs.

Effects from Forest and Woodland Products

Effects under Alternative E would be similar to Alternative D. Personal use of timber would be allowed on all lands within the subunit (1,282,000 acres). Commercial timber salvage sales would be allowed on all lands within the subunit (1,282,000 acres). Commercial timber sales (large and small) would be allowed on 720,000 acres within the SRMA (excludes the Birch Creek WSR Corridor, the RNAs, and crucial caribou and Dall sheep habitat ; 526,000 acres).

Effects from the commercial use of forest products in the SRMA would be greater than any other alternative, impacting the entire subunit (1,282,000 acres). Effects from harvest of forest and woodland products on other BLM lands would also be the same as Alternative C.

These management actions would impact recreation resources and experiences of naturalness and closeness to nature in Semi-Primitive and Backcountry Zones the greatest, but would impact all RMZs. Impacts would depend on the location, size of the area and harvest techniques used. Personal use of timber products would potentially impact all RMZs, especially areas close to the Steese Highway and other access areas through the harvest of both black and white spruce for firewood and house logs. Black spruce and white spruce forest areas with easy summer and winter access could be clear-cut for personal use. The most likely areas impacted would be Birch Creek, Bachelor, Clums and Harrison RMZs.

Effects from Land and Realty

Land use authorizations such as leases and rights-of-way could indirectly and directly impact recreation resources and experiences of naturalness and escape from crowds and pressures of life if allowed in Primitive, Semi-Primitive and Backcountry recreational opportunity spectrum settings. Impacts would depend on the size of the project, use, and associated facilities. No right-of-way avoidance areas or transportation corridors are identified.

Effects from Minerals

Under Alternative E, 1,237,000 acres would be closed to fluid and solid mineral leasing, and locatable minerals protecting recreation values within the Steese National Conservation Area and Birch Creek WSR. All other BLM lands except riparian conservation areas (30,000 acres), would be open to fluid and solid mineral leasing, and locatable minerals impacting recreation activities

by development activities enhancing access but also causing surface disturbance in otherwise natural areas. Opened lands would be subject to Standard Lease Terms, Fluid Mineral Leasing Stipulations and Standard Operating Procedures.

Closing 1,237,000 acres to leasable and locatable minerals would protect recreation resources and experiences of naturalness and escape from crowds by not allowing surface-disturbing activities related to mineral development in all recreational opportunity spectrum settings.

Seismic exploration activities could impact recreation by improving winter and summer access through the clearing of seismic lines. Impacts to naturalness could occur through the clearing of lines for both summer and winter recreation and the experience of escape from crowds would be impacted during seismic operations throughout the subunit including the Steese National Conservation Area.

Under this alternative, all BLM-managed lands (1,213,000 acres) except for the Birch Creek WSR Corridor, would be open to salable minerals. The Steese National Conservation Area would be open to salable minerals. Impacts to recreation resources and experiences of naturalness and escape from crowds would depend on the access, location, and size. It is anticipated that demand for mineral materials in the Steese Subunit would be met from sources on state land and that most sales would be located close to roads. No new mineral sales on BLM lands are anticipated.

Effects from Recreation

Management actions would provide for multiple recreation activities within five recreation setting character settings. The Mount Prindle and Big Windy RNAs (3,000 acres) would be managed as Primitive, both within the Steese National Conservation Area. The Birch Creek, Pinnell Mountain and Wolf Creek RMZs (521,000 acres of which 87,000 acres are outside the National Conservation Area) would be managed as Semi-Primitive. The Preacher Creek RMZ (488,000 acres) within the Steese National Conservation Area would be managed as Backcountry. The Bachelor Creek and Clums RMZs (120,000) acres would be managed as Middlecountry and the Harrison RMZ (114,000 acres) would be managed as Frontcountry, all within the Steese National Conservation Area.

The Primitive RMZ (less than one percent) accounts for the smallest setting, while Semi-Primitive accounts for forty-two percent. The Backcountry RMZ accounts for thirty-nine percent. The Middlecountry RMZ accounts for ten percent, while Frontcountry accounts for nine percent. These percentages are indicative of the management emphasis for recreation activities on BLM-managed lands within the subunit. Less than one percent of the SRMA would be managed for Primitive experiences, minimal facilities development for resource protection and small user groups generally of three or fewer persons and allow for winter motorized use of vehicles weighing 1,000 pounds curb weight or less and 50 inches or less in width. This setting would protect and enhance the experiences of naturalness, escape from crowds and solitude, except when OHVs were present and through the development of user-created non-sustainable winter travel routes. Primitive areas are closed to motorized summer use under all other alternatives. Camping and trail development would also be allowed in the Research Natural Areas, previously closed to these activities.

Semi-Primitive areas (forty-two percent) would be managed for winter and summer cross-country OHV use with vehicles weighing 1,000 pounds or less curb weight with a width of 50 inches or less, small user groups generally of up to four persons, rustic and rudimentary facilities development generally constructed using natural materials, and designed to blend with

surrounding landscape and small user groups generally of four or fewer persons. Opening Semi-Primitive areas to summer OHV use will impact naturalness through the development of user-created non-sustainable travel routes and impact solitude when OHVs are present.

Backcountry experiences allow motorized use, with small facilities development (approximately three acres) generally constructed using naturally appearing materials, and designed to blend with surrounding landscape to support user groups of up to seven people average. Winter and summer cross country OHV use with vehicles weighing 1,000 pounds curb weight or less with widths of 50 inches or less would impact naturalness through the development of user-created non-sustainable travel routes.

Middlecountry is the largest setting (forty-nine percent) and would be managed for cross-country winter and summer motorized use by vehicles weighing 1,000 pounds or less curb weight with a width of 50 inches or less, some development of medium sized facilities (generally less than five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 10 people average with more developed facilities. Cross country OHV use would impact naturalness through the development of user-created non-sustainable travel routes.

The Frontcountry setting would be managed for cross-country winter and summer motorized use by vehicles weighing 1,000 pounds curb weight or less with a width of 50 inches or less, some development of larger sized facilities (over five acres per site), opportunities for larger group activities or party sizes in a partially modified landscape. Experiences of escape from pressures, crowds and exploration of areas could occur in larger groups of 12 people average with more developed facilities. Cross country OHV use would impact naturalness through the development of user-created non-sustainable travel routes.

Crucial caribou and Dall sheep habitat is closed to cross-country summer OHV travel, except by permit. Where crucial caribou and Dall sheep habitat overlaps with RMZs, the closure will apply. This impacts 457,000 acres (37 percent of the SRMA) within portions of Bachelor Creek, Pinnell Mountain, Preacher Creek and Wolf Creek RMZs.

It is foreseeable that user conflicts will increase between non-motorized users and motorized users in all RMZs with the allowance of year round cross-country OHV travel. Naturalness in all RMZs will be impacted by cross-country summer OHV travel in areas with poor soils, permafrost and with vegetation types such as tussock tundra, black spruce bogs and black and white spruce forests within riparian zones. user-created non-sustainable travel routes will impact naturalness due to the limitations of vehicles to side hill areas and the tendency of users to travel straight up or down a hill side from valley bottom to ridge line. Naturalness will be impacted by users tendency to braid travel routes in poor soil areas. Solitude will be impacted by motorized use in areas previously closed to summer and/or winter by allowing more people to potentially access the area and by noise from motorized vehicles with dbA levels reaching 108 dbA.

Other BLM lands would not be managed under a recreation setting character setting and would not be managed for an identified range of experiences or activities.

Effects from Travel Management

The Primitive Mount Prindle and Big Windy RNAs, both within the Steese National Conservation Area, would be open to non-motorized travel, cross-country winter OHV (equal to or less than 1,000 pound vehicle curb weight with a width of 50 inches or less), and aircraft landings, allowing

a full range of recreational opportunities but reducing self-reliance, naturalness and closeness to nature and escape from crowds. Opening 3,000 acres in these areas to winter OHV use could negatively impact activities such as hiking, backpacking and primitive camping through disturbances to vegetation and positively impact activities such as hunting and trapping that depend on motorized vehicles for access, and activities that benefit from motorized use such as cross-country skiing and dogmushing where vehicles are used to set trails or tracks.

The Semi-Primitive Zone of Birch Creek (100,000 acres total with 32,100 acres outside the Steese National Conservation Area) would remain open to OHVs (equal to or less than 1,000 pound vehicle curb weight and width of 50 inches or less) winter cross-country travel by all users. The river corridor would also be open to the use of hovercraft, airboats and personal water craft. Noise from airboat and hovercraft use is in the range of 90–108 dbA, similar to a chain-saw at 110 dbA, and rock concerts at 110–120 dbA. Noise levels of these types of watercraft will have a negative impact on recreational float boaters. Though noise levels would appear to be temporary in nature as the vehicles pass by, in actuality a floater or anyone on the uplands above the river will hear these watercraft from great distances due to the structure of the river valley. The ability to use amphibious water craft like an airboat will increase the opportunity to transport OHV's into areas that have not seen previous OHV travel, especially during the hunting seasons. This may cause user conflicts but is more likely to increase user-created trails on the south side of Birch Creek extending into the Wolf Creek RMZ.

The Pinnell Mountain National Recreation Trail within the Pinnell Mountain RMZ would remain closed to all OHV use.

The Semi-Primitive Wolf Creek RMZ (405,000 acres), and the Backcountry Zone of Preacher Creek RMZ (488,000 acres) would be open to cross-country winter and summer use of OHVs (1,000 pounds curb weight and less with a width of 50 inches or less) allowing a full range of recreational opportunities but reducing self-reliance, naturalness and closeness to nature and escape from crowds. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users.

The Middlecountry Bachelor Creek (31,000 acres) and Clums (89,000 acres) RMZs and the Frontcountry Harrison RMZ (114,000 acres), all within the Steese National Conservation Area, would be open to cross-country winter and summer use of vehicles of 1,000 pounds curb weight and less and 50 inches or less width, allowing for both summer and winter motorized use on 733,000 acres. Recreation users may experience conflicts between different user groups. A permit or approved plan of operation would be required for all other forms of OHV use and impacts would depend of the size of vehicle, season of travel and area of travel. If permitted these activities could create conflicts between different user groups but mitigations could be applied through the NEPA process. Aircraft use would be unrestricted and this may directly and indirectly impact naturalness and solitude for users.

Crucial caribou and Dall sheep habitat is closed to cross-country summer OHV travel, except by permit. Where crucial caribou and Dall sheep habitat overlaps with RMZs, the closure will apply. This impacts 457,000 acres (37 percent of the SRMA) within portions of Bachelor Creek, Pinnell Mountain, Preacher Creek and Wolf Creek RMZs.

Impacts would depend vegetation, soil types and season of travel however it is foreseeable that user conflicts will increase between non-motorized users and motorized users in all RMZs with the allowance of year round cross-country OHV travel. Naturalness in all RMZs will be impacted by cross-country summer OHV travel in areas with poor soils, permafrost and with vegetation

types such as tussock tundra, black spruce bogs and black and white spruce forests within riparian zones. user-created non-sustainable travel routes will impact naturalness due to the limitations of vehicles to side hill areas and the tendency of users to travel straight up or down a hill side from valley bottom to ridge line. Naturalness will be impacted by users tendency to braid travel routes in poor soil areas. Solitude will be impacted by motorized use in areas previously closed to summer and/or winter by allowing more people to potentially access the area and by noise from motorized vehicles.

Other BLM lands (45,000 acres) would be open to cross-country winter and summer use of vehicles of 1,000 pounds curb weight and less with a 50 inch or less width, allowing for free travel for recreational activities such as hunting, trapping and free riding. Effects would be similar to the Middlecountry and Frontcountry Zones.

Effects from Withdrawals

Same as Alternative B.

Effects from Special Designations

Under Alternative E, the RNAs would be open to OHV use of 1,000 pounds curb weight or less for both winter cross-country travel. These areas have previously been closed to all OHV travel. Both RNAs will also be open to camping and trail development which has previously been prohibited. These changes will negatively impact activities that benefit from motorized use such as cross-country skiing and dogmushing where vehicles are used to set trails or tracks.

In Alternative E, the river corridor would also be open to the use of hovercraft, airboats and personal water craft. Opening Birch Creek WSR to hovercraft, airboats and personal watercraft could impact essentially primitive watersheds and shorelines, water quality and the Outstandingly Remarkable Values of Scenic and Recreation though the development of upland camping areas by motorized users during high water events, allowing easier access by OHVs carried in motorized watercraft to shorelines essentially primitive, and result in abandoned equipment as inexperienced motorized users travel upstream beyond their experience or water levels quickly recede from high levels.

4.5.2.2.6. Cumulative Impacts

The effects of past, present and future actions, including the demand for recreational use, changes to the landscape as a result of surface-disturbing activities, and area closures or restrictions for resource protection, could affect recreation management in the Steese Subunit.

The demand for recreational use in the Steese Subunit is anticipated to increase by ten to fifteen percent over the life of the plan, due to general population increases, increases in recreation-related technology, and shifts from other public use areas where visitors are experiencing crowding. This use would occur for both non-motorized (such as hiking, backpacking, hunting, float-boating, river-based recreation, camping, fishing, and gathering of edible plants and berries) and motorized (such as OHV use, including snowmobiles) activities, resulting in changes to the natural landscape and experiences of solitude, escape from crowds and experiences of the sights and sounds of nature. As use increases, there is potential for increasing conflicts among recreationalists seeking similar experiences through different activities, generally between non-motorized users and motorized users, but also conflicts between different uses such as mineral development and recreation.

Surface-disturbances resulting from mineral activities, forestry and unmitigated OHV use could cumulatively affect recreational users if activities were concentrated in heavily recreated areas and if activities overlapped in duration. Effects to recreation as a result of these cumulative effects may include the potential dislocation of wildlife for hunting and viewing purposes, and/or the alteration of naturally appearing, scenic viewsheds.

Special designations, including ACECs and WSRs, would further protect the Steese Subunit, by increasing wildlife numbers that benefit wildlife viewing, hunting, and fishing opportunities. As the size and scope of these areas change, opportunities for land and water based recreation uses that incorporate scenic viewsheds as part of the experience would also change. However, as areas that require special management attention, to prevent irreparable damage to historic, cultural and scenic values, the need for additional restrictions could limit motorized use and other recreational activities and experiences.

Implementing each alternative would contribute to a significant change to recreational opportunities on public lands with Alternative B limiting motorized use and enhancing the primitive experience for non-motorized use, Alternative C balancing motorized and non-motorized use and Alternative D enhancing motorized use and more developed recreation opportunities.

4.5.2.3. Travel Management Steese Subunit

Summary of Effects

Effects on travel management from the proposed alternatives would result in a wide range of possible outcomes. Site-specific measures to protect and preserve recreation resources and other sensitive resource values, including fish and wildlife, soil, water, Special Status Species, and cultural and paleontological resources, could result in seasonal or permanent route restrictions or closures. Surface-disturbing activities, caused by forestry and mineral actions, could affect travel management through the expansion of the existing transportation network.

Alternative C would provide the greatest range of motorized and non-motorized recreation experiences, while protecting area resources and minimizing user conflicts. It would be followed by Alternative B, then A and E, with Alternative D having the most potential for resource impacts and conflict among users.

Table 4.15. Comparison of OHV Designations: Steese Subunit

Area Designation	Alternative									
	A		B		C		D		E	
	Acres	% *	Acres	% *	Acres	% *	Acres	% *	Acres	% *
Year-round										
Undesignated	55,000	4	0	0	0	0	0	0	0	0
Open	0	0	0	0	0	0	0	0	0	0
Closed	3,000	<1	3,000	<1	3,000	<1	3,000	<1	0	0
Limited	1,224,000	96	1,279,000	99.8	1,279,000	99.8	1,279,000	99.8	1,288,000	100
Winter (October 15 through April 30)										

Area Designation	Alternative									
	A		B		C		D		E	
	Acres	%*	Acres	%*	Acres	%*	Acres	%*	Acres	%*
Limited: Cross-country use of vehicles 1,000 pounds curb weight and less allowed	1,224,000	96	1,279,000	99.8	1,279,000	99.8	1,279,000	99.8	1,288,000	100
Summer (May 1 through October 14)										
Limited: Cross-country use of vehicles 1,000 pounds curb weight and less allowed	1,082,000	84	0	0	0	0	769,000	60	1,137,000	89
Limited: Existing Routes and 1,000 pounds curb weight and less (except for game retrieval)	0	0	0	0	611,000	47	0	0	0	0
Limited: Closed to summer OHV use ^b	142,000	11	1,288,000	99.8	677,000	53	510,000	40	145,000	11

*Percent of the lands within the Steese Subunit (1,282,000 acres), include 14,000 acres of state inholdings in the Steese NCA. Management would not apply to state land unless acquired by BLM.

^bAdditive to lands under a year-round Closed Area Designation

All of the Steese National Conservation Area will either be Limited or Closed OHV designation under Alternatives B, C, D and E.

4.5.2.3.1. Effects Common to All Alternatives

Effects from Locatable Minerals

Placer mining activities have the potential to affect travel and transportation management through the expansion of the existing route network. The construction of winter roads and trails for mineral development would provide a direct benefit to OHV users through the enhancement of public access opportunities. These effects would be the highest under Alternative D, followed by Alternatives C, B, and A.

Effects from Travel Management

Under all alternatives, travel management actions would continue to provide for a range of motorized and non-motorized opportunities, while protecting resource values and minimizing user conflicts. This would allow the BLM to sustain and enhance travel opportunities and experiences, visitor access and safety, and resource conservation.

Approximately 200 miles of existing recently used summer routes were identified for interim management (Maps 48, 49, 50, 51, and 52) until a Travel Management Plan can be developed. Since all public lands are required to have OHV area designations, Travel Management Zones (TMZs) were designated as Limited or Closed. No areas were designated as Open. Limited designations may restrict motorized vehicles to existing routes, weight, and/or season of use. Closed designation prohibits off-road vehicle use year round.

Under all alternatives, non-motorized travel (e.g., float-boating, pedestrian, equestrian, and mountain bikes) would continue to be allowed on all BLM lands in the Steese Subunit (1,288,000 acres). There would be no change from current management, and opportunities would continue for visitors who access public lands by float-boat (e.g., rafts, kayaks, and canoes), foot, horse, or bicycle. Fixed-wing and helicopter access would remain generally unrestricted, except in Primitive Zones where landing without a permit would be allowed as long as no clearing of vegetation occurs.

The Steese Subunit would continue to be managed in support of its waterways and non-motorized cross-country travel routes, to provide opportunities of a more primitive nature.

Effects from Special Designations

Under all alternatives, the 126 miles of Birch Creek WSR, as designated through ANILCA, would continue to be managed as a “wild” river pursuant to the WSRA. Management of “wild” rivers, per BLM guidance, would impact travel in Birch Creek WSR Corridor where the construction of new roads, primitive roads, trails, or other provisions for overland motorized travel would not be permitted (BLM 8351 Manual).

Research Natural Areas would be open to non-motorized travel and aircraft landings without clearing of vegetation. Development of non-motorized trails may occur.

4.5.2.3.2. Alternative A (No Action)

Effects from Forest and Woodland Products

Commercial Timber harvest is not allowed in the Steese National Conservation Area. Current levels of timber and forest product harvest for personal use have minimal effects on travel and transportation management. Permits are monitored to ensure that the authorized amounts, locations, and stipulations of the permit have been followed. Proliferation of routes could occur, but stipulations for winter cutting or walk-in only would limit this impact. This program could affect travel management through the expansion of the existing transportation network or if restrictions or emergency closures became necessary, to mitigate impacts to damaged areas.

Effects from Lands and Realty

Maintaining four transportation corridors in the Steese National Conservation Area will allow for concentrated travel within these corridors and could possibly restrict the development of rights-of-ways in other areas. The four corridors cover 53,000 acres. No withdrawal review would occur and the ANCSA 17(d)(1) withdrawals would be retained. This would limit the need for winter overland move routes and summer travel associated with mining to areas with current or historic travel routes. There may be a need for a few additional travel routes associated with current mining claims.

Effects from Recreation

This alternative provides the most motorized public access of any of the alternatives. Travel would remain limited to vehicles 1,500 pounds GVWR and less, except for RNAs, which are closed to OHV use. Thus, while this alternative would offer the most opportunities for recreational activities that involve the use of motorized travel, including hunting and OHV riding; fewer opportunities would exist for recreational users seeking a primitive, non-motorized type of experience.

Effects from Travel Management

This alternative would provide motorized and mechanized public access, as travel and transportation would continue to manage 1,082,000 acres (eighty-four percent) as limited to summer-motorized use and 1.2 million acres (ninety-nine percent) as limited to winter-motorized use. Only the RNAs (3,000 acres) are closed to OHV use. Limited only by weight (1,500 pounds GVWR and less), this alternative would provide for those users seeking cross-country motorized activities. 55,000 acres are undesignated with no limitations in place.

Under this alternative, an increased user-created routes expected throughout the SRMA. An additional 300 miles of user-created routes would be expected over the life of the plan. This increase averages out to the creation of 10 miles of routes per year. These routes would be between 4 feet to over 12 feet wide depending on vegetation and other landscape parameters. Total area impacted could be from 145 acres to less than 436 acres. With improvements to vehicles and increased populations, it is reasonable to assume that route creation would continue or more likely exceed the 10 miles per year over the life of the plan resulting in over 600 miles of user-created routes impacting from 290 to less than 872 acres or less than 1 percent of the Steese National Conservation Area. However, these routes would likely be concentrated in certain areas but would gradually extend further into the Steese National Conservation Area from existing routes. People are willing to travel over 80 miles on user-created travel routes in order to access favorite areas.

Areas of concentration in the South Unit would likely be Upper and Lower Birch Creek Waysides and the Birch Creek River Corridor with a Semi-Primitive RMZ during snow seasons. Additional concentration areas within the Frontcountry Zone from Great Unknown, Fryingpan, Harrison, and Portage creeks (all within the Harrison Creek RMZ) could be expected to occur during all seasons. Within Middlecountry Zones, Volcano, Clums Fork, Harrington Fork, all within the Clumz RMZ could see additional concentrated use with new routes created especially from Harrington Fork area due to increased winter travel and those routes being converted to summer OHV routes.

Areas of concentration in the North Unit would likely be from Bachelor, Preacher, American and Convert Creeks, and Loper Creeks. Access to the Mount Prindle RNA and the Mount Prindle Primitive area would be open to winter activities and could see substantial route development. Winter routes will be used during snowfree seasons by OHVs because they are cleared and easier to travel, with some illegal use occurring during the fall hunting seasons.

It is expected that conflicts between user groups would increase under this alternative between non-motorized users and motorized users. Primitive and Semi-Primitive experiences could be impacted as users expecting solitude and a more primitive experience come in contact with motorized use and visible changes to the natural landscape from cross-country summer and winter motorized use.

Typically, winter routes in the Steese SRMA are more likely to be positioned near valley bottoms where there are more trees, the snow tends to be deeper and less drifting occurs, but the soil structure tends to be highly organic, soft, wet and underlain by permanently frozen ground. Vegetation types tend to be tussock tundra and black spruce and/or white spruce forest within the riparian zone. Whereas, summer routes designed for OHV use are typically developed in the higher elevations, out of the valley bottoms where the soils tend to be drier and shallower, drainable, and more conducive to such uses. user-created access to these higher areas tend to be straight up the hillside from valley bottom to ridge top — it is difficult to side hill on summer OHVs. User-created routes tend to be non-sustainable and it would be extremely difficult to

get equipment south of Birch Creek to perform repairs or reclamation, due to the distance and poor soil conditions.

Disturbance of the tussock tundra by OHVs results in compression of the tundra mat. The compression lessens the insulation, thereby melting the permafrost and causing the compressed area to subside or sink. The subsidence, caused by the compression of the organic layer, then will pool or channel water which causes erosion and a noticeable scar on the landscape for decades. Once water pools and erosion occurs on the route, OHV's will try to avoid these areas and begin route braiding, further impacting the soils and the landscape. Over the life of the plan it can be assumed that over 300 miles of user-created routes would be developed as people try to push further and further into the back country.

There is minimal summer use of OHVs within the Birch Creek WSR corridor, though some illegal activity does occur occasionally. Nearly zero use has occurred in the summer south of the Birch Creek WSR corridor as it has difficult access. Signing, education and law enforcement presence would need to be increased and has not prevented unauthorized use within the corridor by some individuals in the past.

The Fortymile caribou herd has been utilizing the Steese SRMA for summer and winter seasons the past few years. The Steese National Conservation Area (Unit 25C) is part of Zone 4 of the Fortymile Caribou Management Area. The Fortymile caribou herd is highly sought after by both subsistence and non-subsistence hunters. Impacts will vary depending on where the herd is located as caribou migrations are very difficult to predict. Previous experience has shown that wherever the caribou herd is present during both fall and subsistence hunting seasons, there is a lot of hunting pressure. The Pinnell Mountain National Recreation Trail and surrounding highlands as well as Birch Creek WSR are typical caribou habitat, so when the herd is nearby, one could expect hundreds of hunters coming into the Steese SRMA for both the regular fall hunting season and any additional federal subsistence hunts. Birch Creek WSR Corridor is also a very popular moose hunting area.

As other public lands close or restrict use such as limiting the use of airboats and other lands become unavailable to recreational activities due to privatization, use on BLM-managed lands will likely result in greater concentration of users, new uses with undocumented and unknown impacts and conflicts between users for limited resources.

4.5.2.3.3. Alternative B

Effects from Forest and Woodland Products

Effects would be similar to those identified under Alternative A, except personal use of timber, commercial/salvage timber sales, and commercial forest product harvest would not be allowed within the Steese SRMA (inclusive of the Steese National Conservation Area). On all other lands, 45,000 acres, these uses would be considered. Effects would be negligible.

Effects from Lands and Realty

Under Alternative B, relinquishing two of the transportation corridors could limit access to parts of the Steese National Conservation Area for rights-of-way (ROW), recreation, mining and other possible transportation activities. However, rights-of-way (ROW) could still be authorized, even without a designated transportation corridor. ROW could be more dispersed throughout the National Conservation Area, rather than being limited to a corridor. The Montana Creek to

Preacher Creek Corridor and the Great Unknown Creek Corridor would remain, covering 29,000 acres.

The Steese ACEC, Birch Creek WSR Corridor, and RNAs would be a ROW avoidance areas, potentially limiting future transportation routes. Effects would likely be minimal due the anticipated lack of demand for ROW within these areas.

Effects from Recreation

The RSC setting provides a framework for identifying the types of recreation activities that the public might desire and is directly related to the travel and transportation management opportunities available in those areas. The RSC setting for this alternative would maintain twenty percent (87,000 acres in Semi-Primitive and 124,000 acres in Backcountry RMZs) of the Steese Subunit as Semi-Primitive and Backcountry. The remaining eighty percent (1,035,000 acres in Primitive RMZs) would be managed for a Primitive experience. Since RMZs and Travel Management Zones (TMZs) are delineated with the same boundaries under each alternative and were designed to complement one another, impacts from recreation are expected to be minimal.

Federally qualified subsistence users would be allowed summer cross-country travel throughout the subunit with a permit. Effects of this alternative include increased user-created routes expected throughout the SRMA but especially within the RNAs and Birch Creek WSR Corridor, which have been closed to summer OHV use since 1986. An addition of over 300 miles of user-created routes would be expected over the life of the plan. This increase averages out to the creation of 10 miles of routes per year. These routes are between 4 feet to over 12 feet wide depending on vegetation and other landscape parameters. Total area impacted could be from 145 acres to less than 436 acres. With improvements to vehicles and increased populations, it is reasonable to assume that route creation would continue or more likely exceed the 10 miles per year over the life of the plan resulting in over 600 miles of user-created routes impacting from 290 to less than 872 acres or less than 1 percent of the Steese National Conservation Area. However, these routes would likely be concentrated in certain areas but would gradually extend further into the Steese National Conservation Area from existing routes. People are willing to travel over 80 miles on user-created travel routes in order to access favorite areas.

Areas of concentration in the South Unit would likely be Upper and Lower Birch Creek Waysides and the Birch Creek River Corridor with a Semi-Primitive RMZ. Access to the Birch Creek River Corridor during the spring, summer and fall would be new legal access for 7 percent of the surrounding area population eligible for subsistence activities since the corridor has previously been closed to OHVs except during the winter months and it is expected that there will be a substantial increase in OHV routes especially from the river itself with OHVs being transported on motorized boats. Additional concentration areas within the Frontcountry Zone from Great Unknown, Fryingpan, Harrison, and Portage creeks (all within the Harrison Creek RMZ) could be expected to occur. Within Middlecountry Zones, Volcano, Clums Fork, Harrington Fork, all within the Clumz RMZ could see additional concentrated use with new routes created especially from Harrington Fork area due to increased winter travel and those routes being converted to summer OHV routes.

Areas of concentration in the North Unit would likely be from Bachelor, Preacher, American and Convert Creeks, Faith, Sourdough, and Loper Creeks. Access to the Mount Prindle RNA would be year-round for the 7 percent of the area populations eligible for subsistence activities and should see substantial route development. Winter only travel is allowed for the 93 percent of the population adjacent to the planning area since the Mount Prindle area has been closed to all

OHVs. Access to the Mount Prindle Primitive area would be year-round with weight limits for all users and should see a substantial increase in OHV routes since this area has been closed to OHVs except during the winter months. Winter routes will be used during snowfree seasons by OHVs because they are cleared and easier to travel.

It is expected that conflicts between user groups would increase under this alternative, especially between federally qualified subsistence users and non-subsistence users as one group access areas closed to other users. Other conflicts could occur between non-motorized users and motorized users within the Birch Creek WSR and along the Pinnell Mountain National Recreation Trail. Primitive and Semi-Primitive experiences could be impacted as users expecting solitude and a more primitive experience come in contact with motorized use. Under this alternative, it is expected that users wanting a quite non-motorized experience may be displaced out of the subunit entirely.

Effects from Travel Management

Under this alternative, 99.8 percent of the Steese Subunit (100 percent of the Steese National Conservation Area) would be designated as limited to no summer OHV use. Winter motorized use of snowmobiles would be allowed on all lands in the subunit except RNAs (99 percent). All other OHV travel would require a permit. The use of hovercraft, airboats and personal watercraft would not be allowed on within Birch Creek WSR and the Steese National Conservation Area. Impacts related to any access is detailed above.

Effects from Special Designations

Under Alternative B, the Steese ACEC (927,000 acres within the Steese National Conservation Area) would be subject to restrictions to winter motorized use if necessary to protect wildlife habitat.

Big Windy Creek (4,500 acres), within the Steese National Conservation Area, could be added to the NWSR as a “wild” river where no construction of new roads, trails or other provisions for overland motorized travel would be permitted within the river corridor.

4.5.2.3.4. Alternative C

Effects from Forest and Woodland Products

Effects would be similar to those identified under Alternative A, except personal use of timber and commercial timber sales would be allowed on ninety-three percent of the subunit. Only Birch Creek WSR and the RNAs would be closed to these uses. Commercial use of forest products (e.g., berries, bark) would be considered on ninety-nine percent of the subunit, only the RNAs would be closed. These activities would require either temporary winter access or more permanent summer access for both large and small motorized vehicles.

Effects from Lands and Realty

Same as Alternative B, except there would be no ROW avoidance areas.

Effects from Recreation

Similar to Alternative B, the BLM would continue to manage public lands for a variety of recreational activities within all RSC settings with similar effects. The RSC setting for Alternative

C establishes forty-seven percent (including 452,000 acres Middlecountry, 114,000 acres Frontcountry, and 36,000 acres other BLM-managed lands) of the subunit as limited (i.e., 1,000 pounds curb weight and less, existing routes except for game retrieval) to summer-motorized experiences, while fifty-three percent (523,000 acres Semi-Primitive, 154,000 acres Backcountry, and 3,000 acres Primitive) would be limited to winter OHV use only. In contrast, during the winter, 99.8 percent of the subunit would be available to the winter use of snowmobiles, while 0.2 percent (Primitive RMZs) would be closed. Compared to Alternative B, fewer opportunities would exist for recreational users seeking primitive, non-motorized experiences, while more opportunities would be available for recreational activities that involve the use of motorized travel.

Effects from Travel Management

Under this alternative, ninety-nine percent of the subunit would be designated as Limited for OHV use with seasonal and weight restrictions. Less than one percent would be designated as Closed to OHV use. Winter motorized use of snowmobiles would be allowed on ninety-nine percent of the subunit; fifty-three percent would be closed to summer OHV travel. Summer motorized use of OHVs would be limited to existing routes on forty-seven percent of the subunit. All other OHV travel could be authorized by permit. The use of hovercraft, airboats and personal watercraft would not be allowed on within Birch Creek WSR and the Steese National Conservation Area on “wild” river segments above the confluence of Birch Creek and the South Fork of the Yukon Fork of Birch Creek. This alternative offers more opportunity for motorized travel and access than Alternative B, but less than Alternative A.

Effects from Special Designations

Under Alternative C, a smaller Steese ACEC (460,000 acres) would be subject to restrictions to winter motorized use if necessary to protect wildlife habitat. No new rivers would be considered for designation. Effects on travel management would be less than under Alternative B.

4.5.2.3.5. Alternative D

Effects from Forest and Woodland Products

Effects would be similar to those identified under Alternative A. Under Alternative D, personal use of timber and timber salvage sales would be considered throughout the subunit and commercial timber sales would be allowed on ninety-three percent. Commercial use of forest products would be allowed on ninety-nine percent of the subunit, only the RNAs would be closed to this type of use. These activities would require either temporary winter access or more permanent summer access for both large and small motorized vehicles.

Effects from Lands and Realty

Under Alternative D, no transportation corridors would be designated. ROW would be considered throughout the subunit (1,275,000 acres), potentially resulting in additional access.

Effects from Recreation

Similar to Alternative C, the BLM would manage for a variety of recreational activities within all RSC settings. Effects would be similar to those identified under Alternative B. Under Alternative D, the RSC setting establishes sixty percent of the subunit (including 609,000 acres Middlecountry, 124,000 acres Frontcountry, and 36,000 other BLM-managed lands) as limited

(1,500 pounds curb weight and less) to summer-motorized experiences, while forty percent (3,000 acres Primitive, 103,000 acres Semi-Primitive, and 407,000 acres Backcountry) would remain limited to winter OHV use only. In contrast, during the winter months, 99.8 percent of the subunit would be available to the winter use of snowmobiles, while 0.2 percent (3,000 acres Primitive RNA) would remain closed. Thus, while this alternative would offer the least opportunities for recreational users seeking primitive, non-motorized experiences, more opportunities would exist for recreational activities that involve the use of motorized travel, when compared to Alternatives B and C.

Effects from Travel Management

Same as Alternative C, ninety-nine percent of the Steese Subunit would be designated as Limited for OHV use; less than one percent would be designated as Closed to OHV use. Winter motorized use of snowmobiles would be allowed on ninety-nine percent of the subunit; cross-country summer motorized use of OHVs would be allowed on sixty percent. Only Primitive, Semi-Primitive and Backcountry RMZs (forty percent) would be closed to summer OHV use. Other OHV travel would be considered by permit only. The use of hovercraft, airboats and personal watercraft would not be allowed on within Birch Creek WSR and the Steese National Conservation Area on “wild” river segments above the confluence of Birch Creek and the South Fork of the Yukon Fork of Birch Creek.

Effects from Special Designations

Under Alternative D, the Steese ACEC (193,000 acres) would be subject to restrictions to winter motorized use if necessary to protect wildlife habitat. Effects would be less than Alternative C as the ACEC would be smaller.

4.5.2.3.6. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs of all the alternatives. This alternative allows the greatest use of OHVs with weight limits and motorized water craft at the expense of non-motorized uses .

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple use. Wilderness characteristics would be maintained on 1,009,000 acres, or eighty percent of lands having wilderness characteristics, by limiting activities that impact wilderness characteristics of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation. OHV use would be allowed on all lands subject to weight limits. The remaining 249,000 acres (twenty percent) would be managed for other resources as priority over protecting wilderness characteristics.

Effects from Forest and Woodland Products

Effects would be similar to those identified under Alternative A. Under Alternative E, personal use of timber, commercial timber salvage sales and commercial use of forest products would be considered throughout the subunit. Commercial timber sales would be allowed on fifty-eight percent of the subunit but not allowed within the Birch Creek WSR Corridor, the RNAs or crucial

caribou and Dall sheep habitat (529,000 acres). These activities would require either temporary winter access or more permanent summer access for both large and small motorized vehicles.

Effects from Lands and Realty

Under Alternative E, no transportation corridors would be designated. ROW would be considered throughout the subunit (1,267,000 acres), potentially resulting in additional access.

Effects from Recreation

Under Alternative E, the BLM would manage for a variety of recreational activities within five different RSC settings within the Steese SRMA. Under this alternative, the RSC setting establishes 3,000 acres as Primitive (less than 1 percent), 537,000 acres as Semi-Primitive (42 percent), 488,000 acres as Backcountry (39 percent), 120,000 acres as Middlecountry (10 percent), 114,000 acres as Frontcountry (9 percent), and 36,000 other BLM-managed lands. The entire subunit would be limited by weight (1,000 pounds curb weight and less) for all OHV use with additional restrictions applied to different user groups.

This alternative would offer the least opportunities for recreational users seeking primitive, non-motorized experiences, more opportunities would exist for recreational activities that involve the use of motorized travel, when compared to Alternatives B, C and D.

Effects from Travel Management

Under Alternative E, 100 percent of the Steese Subunit would be designated as Limited by weight to 1,000 pounds curb weight or less for OHV use. Winter motorized use of snowmobiles would be allowed on 100 percent of the subunit; cross-country summer motorized use of OHVs would be allowed on 84 percent while the RNAs and the Birch Creek WSR Corridor would be limited to winter OHV use only. The use of hovercraft, airboats and personal watercraft would be allowed on within Birch Creek WSR and the Steese National Conservation Area on “wild” river segments above the confluence of Birch Creek and the South Fork of the Yukon Fork of Birch Creek. This amends the Birch Creek River Management Plan, December 1983.

Effects of this alternative include increased user-created summer and winter routes throughout the SRMA but especially winter routes within the RNAs and Birch Creek WSR Corridor. An addition of over 300 miles of user-created routes would be expected over the life of the plan within the entire SRMA. This increase averages out to the creation of 10 miles of routes per year. These routes are between 4 feet to over 12 feet wide depending on vegetation and other landscape parameters. Total area impacted could be from 145 acres to less than 436 acres. With improvements to vehicles and increased populations, it is reasonable to assume that route creation would continue or more likely exceed the 10 miles per year over the life of the plan resulting in over 600 miles of user-created routes impacting from 290 to less than 872 acres or less than 1 percent of the Steese National Conservation Area. However, these routes would likely be concentrated in certain areas but would gradually extend further into the Steese National Conservation Area from existing routes. People are willing to travel over 80 miles on user-created travel routes in order to access favorite areas.

It is expected that as improvements are made to OHVs, areas previously inaccessible to summer OHVs would see more use resulting in increased user-created routes. There are limited developed routes in Preacher Creek, Clums, and Wolf Creek RMZs. These zones see winter snowmobile use but very limited summer use due to difficult access.

As snowmachine use increases with new routes being created yearly for hunting, trapping and recreational activities, these routes are being used during snowfree seasons by OHVs because they are cleared and easier to travel.

Typically, winter routes in the Steese SRMA are more likely to be positioned near valley bottoms where there are more trees, the snow tends to be deeper and less drifting occurs, but the soil structure tends to be highly organic, soft, wet and underlain by permanently frozen ground. Vegetation types tend to be tussock tundra and black spruce and/or white spruce forest within the riparian zone. Whereas, summer routes designed for OHV use are typically developed in the higher elevations, out of the valley bottoms where the soils tend to be drier and shallower, drainable and more conducive to such uses. User-created access to these higher areas tend to be straight up the hillside from valley bottom to ridge top — it is difficult to side hill on summer OHVs. User-created routes tend to be non-sustainable and it would be extremely difficult to get equipment south of Birch Creek to perform repairs or reclamation, due to the distance and poor soil conditions.

Disturbance of the tussock tundra by OHVs results in compression of the tundra mat. The compression lessens the insulation, thereby melting the permafrost and causing the compressed area to subside or sink. The subsidence, caused by the compression of the organic layer, then will pool or channel water which causes erosion and a noticeable scar on the landscape for decades. Once water pools and erosion occurs on the route, OHV's will try to avoid these areas and begin route braiding, further impacting the soils and the landscape. Over the life of the plan it can be assumed that over 300 miles of user-created routes would be developed as people try to push further and further into the back country.

The Fortymile caribou herd has been utilizing the Steese SRMA for summer and winter seasons the past few years. The Steese National Conservation Area (Unit 25C) is part of Zone 4 of the Fortymile Caribou Management Area. The Fortymile caribou herd is highly sought after by both subsistence and non-subsistence hunters. Impacts will vary depending on where the herd is located as caribou migrations are very difficult to predict. Previous experience has shown that wherever the caribou herd is present during both fall and subsistence hunting seasons, there is a lot of hunting pressure. The Pinnell Mountain National Recreation Trail and surrounding highlands as well as Birch Creek WSR are typical caribou habitat, so when the herd is nearby, one could expect hundreds of hunters coming into the Steese SRMA for both the regular fall hunting season and any additional federal subsistence hunts. Birch Creek WSR Corridor is also a very popular moose hunting area.

As other public lands close or restrict use such as limiting the use of airboats and other lands become unavailable to recreational activities due to privatization, use on BLM-managed lands will likely result in greater concentration of users, new uses with undocumented and unknown impacts and conflicts between users for limited resources. Opening Birch Creek WSR to airboats, hovercraft, and motorized river boats will likely see conflicts with non-motorized users. Illegal summer OHV impacts would spread throughout the Birch Creek, Wolf Creek, Big Windy RNA, and Clums RMZs when the transportation of OHV on motorized watercraft occurs within traditionally closed areas.

Motorized watercraft can carry OHVs which will likely result in illegal OHV travel along the riparian zones for recreational activities during the spring and fall seasons. Motorized access above the traditional common 6N-7N township line will open areas previously inaccessible to OHV use such as the south side of Birch Creek and Big Windy Hot Springs. Motorized use

further upriver from the bridge may result in more upland camps and abandoned property as users travel upriver during higher water events and depart quickly with rapidly decreasing water flows. More abandoned equipment and supplies may occur as motorized boats run aground as they reach the limits of safe travel and users travel upriver beyond their skill levels.

Effects from Wildlife

Under Alternative E, crucial caribou and Dall sheep habitat (457,000 acres) would be subject to restrictions to winter motorized use if necessary to protect wildlife habitat. Effects would be the same as Alternative C.

Under this alternative the Big Windy and Mount Prindle Research Natural Areas would be open to all winter snowmobile use and open to summer qualified federal subsistence users with weight limits.

4.5.2.3.7. Cumulative Impacts

The majority of existing routes in the Steese Subunit are the result of user-created routes that follow historic non recreational routes (such as, mining or administrative access) or were created by OHV users repeatedly driving cross-country. Accordingly, many of the existing routes are not sustainable from a resource management perspective, and can cause significant resource damage including, but not limited to, soil compaction, vegetation deterioration, or poor water quality. If not addressed, these impacts will continue to have an effect on travel and transportation management for years to come.

With increased pressures from growing populations and advances in recreational vehicle technology, the Steese Subunit is anticipated to experience a similar growth in travel-related land use and activity participation. Since OHV use accounts for the majority of travel-related activities in the subunit, it is perceived that the demand for this activity will be of greatest concern during the life of the plan. Given its current rate of user increase (approximately ten percent per year), motorized travel could potentially double within the next 10 years. As this occurs, the need for trails and mechanisms for managing these trails will become necessary.

Other lands in the subunit are managed by federal (NPS and USFWS), state, Native, and private entities. As a result, the rules and regulations governing the use of OHVs may differ slightly, when compared to BLM-managed lands. For instance, the State of Alaska generally restricts OHVs to 1,500 pounds curb weight and allows cross-country travel in most areas as long as use does not cause or contribute to resource degradation. The BLM generally restricts OHVs to 1,000 pounds curb weight and under Alternatives B and C, would limit travel to existing routes and trails. This may lead to some confusion, if riders are unaware that they have crossed the boundary of a different management agency or entity. Consequently, a proliferation of user-created routes could occur along the boundaries of BLM lands.

4.5.3. Special Designations

4.5.3.1. Wild and Scenic Rivers Steese Subunit

Summary of Effects

Under all alternatives, the Birch Creek WSR will continue to be managed to protect the free-flowing characteristics of the river, water quality and Outstandingly Remarkable Values. Outstandingly remarkable values for Birch Creek are scenic, recreation, and fish populations and habitat.

Management actions that protect the naturalness of the landscape such as wilderness characteristics, protection of fish and wildlife habitats, protection of vegetation, and recreation management for more primitive experiences will help protect many of the Outstandingly Remarkable Values of river systems.

Alternative B is the only alternative where river segments are recommended for inclusion to the National Wild and Scenic Rivers System (NWSR). Big Windy Creek is recommended with Outstandingly Remarkable Values of scenic, geologic, and wildlife populations and habitat.

4.5.3.1.1. Alternative A (No Action)

No additional river segments are identified suitable for inclusion to the NWSR. Under this alternative, the BLM would not recommend that Congress designate any river segments. Birch Creek WSR would continue to be managed to protect water quality, free-flowing characteristics and important river values.

4.5.3.1.2. Alternative B

In general, this alternative anticipates a lower level of resource development and is the only alternative where river segments are determined to be suitable for inclusion to the NWSR. The BLM would recommend that Congress designate one segment. This recommendation would influence the Congressional decision and increase the likelihood of permanent legislative protection. Decisions are evaluated for effect on identified Outstandingly Remarkable Values, free-flowing character and water quality.

Through the Wild and Scenic Rivers Inventory (Appendix E, *Wild and Scenic Rivers Inventory*) the BLM has determined which rivers and streams are suitable for inclusion in the NWSR. Within the Steese Subunit, Big Windy Creek was determined to be suitable with a classification of “wild.” Outstandingly remarkable values are scenic, geologic and wildlife. Any segments determined to be suitable must be managed for the protection of its Outstandingly Remarkable Values and free-flowing nature until such time as Congress acts upon the determination finding and either designates the river segment in the NWSR or removes it from consideration. If the segment is removed from consideration by Congress, the BLM would manage the segment according to the management provisions of the RMP. The determination of suitable is a policy determination.

Effects from Air and Atmospheric Values

Protection and enhancement of air resources that would continue to promote visually clear skies and maintain good visibility would protect outstandingly remarkable scenic values.

Effects from Cave and Karst Resources

Protection of cave resources located adjacent to or within the river corridor would protect outstandingly remarkable scenic and geologic values.

Effects from Cultural and Paleontological Resources

Surface-disturbing activities (e.g., site excavation) have the potential to directly and indirectly impact water quality, and indirectly impact outstandingly remarkable scenic, geologic and wildlife habitat values.

Effects from Soil, Vegetation, and Water Resources

Management of soil resources, vegetative communities, and watersheds for a properly functioning condition within riparian zones, uplands, wetlands and aquatic areas would directly and indirectly enhance water quality and outstandingly remarkable scenic and wildlife habitat values.

Effects from Visual Resources

“Wild” river segments would be managed as a VRM Class I with the objective to preserve the existing character of the landscape and provide for natural ecological changes. Very limited management activities may occur where the level of change to the characteristic landscape is very low and must not attract attention. This would protect outstandingly remarkable scenic values.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristic would directly protect outstandingly remarkable scenic values, the free-flowing characteristics and water quality.

Effects from Wildland Fire Ecology and Management

Wildland fires have the potential to destroy or harm wildlife habitat and populations, affecting the outstandingly remarkable wildlife values.

Effects from Wildlife

Management of a naturally functioning ecosystem would directly and indirectly protect outstandingly remarkable scenic and wildlife populations and habitat values and enhance water quality.

Effects from Lands and Realty

Land use authorizations, such as leases and rights-of-way, could indirectly and directly impact outstandingly remarkable scenic, geologic and wildlife populations and habitat values, directly impact free-flowing characteristics, and indirectly impact water quality if authorized across or along the river segment.

Effects from Recreation

Big Windy Creek is located within the Primitive Wolf Creek RMZ. Minimal facilities development would occur within this RMZ. Currently, there are a few small groups of recreation users who visit the segment and visitation is expected to remain low due to the remoteness. Visitors to the area may impact outstandingly remarkable geologic and wildlife values by visiting the hot springs. Facilities may directly impact scenic quality and indirectly impact water quality, however they would be designed to blend with the surrounding landscape characteristics and to not adversely affect water quality.

Effects from Travel Management

Unrestricted non-motorized travel could directly impact outstandingly remarkable scenic values and water quality with the development of social travel routes. Restricted motorized travel could directly and indirectly impact water quality and outstandingly remarkable wildlife values by allowing motorized access to remote areas. Motorized use may directly impact outstandingly remarkable scenic values and indirectly impact outstandingly remarkable geologic values with the development of travel routes.

Effects from Special Designations

Designation of 927,000 acres as the Steese ACEC, with restrictions and limitations on resource development, would protect outstandingly remarkable scenic, geologic, and wildlife population and habitat values and indirectly enhance water quality due to limitations and restrictions to development.

Big Windy Creek, totaling 14 miles and 4,500 acres, would be recommended for designation to the NWSR. The designation of this river by Congress would provide for greater protection of overall river values and of outstanding remarkable river values specifically. The amount of protection is dependent on the classification of the river segment. Management of suitable rivers would be coordinated with the State of Alaska.

The management of Big Windy RNA would protect outstandingly remarkable scenic, geologic and wildlife populations and habitat values because of its designation as a right-of-way avoidance area, and prohibitions on mining, off-road vehicles, and camping. These management actions would also directly and indirectly enhance water quality.

Effects from Hazardous Materials

Environmental remediation activities such as the removal of surface or buried wastes from abandoned sites and removal of contaminated soils could directly and indirectly enhance water quality and outstandingly remarkable scenic and wildlife values depending on the location of these activities.

Effects from Subsistence

Harvest of subsistence resources such as timber and other forest products may directly and indirectly impact the outstandingly remarkable scenic and wildlife values if collection of these resources occurs within the river corridor.

4.5.3.1.3. Alternative C

Under Alternative C no additional rivers segments suitable for inclusion to the NWSR have been identified. The BLM would not recommend that Congress designate any additional river segments. Birch Creek would continue to be managed to protect water quality, free-flowing characteristics and identified Outstandingly Remarkable Values of scenic, recreation and fish populations and habitat.

4.5.3.1.4. Alternative D

Same as Alternative C.

4.5.3.1.5. Alternative E (Proposed RMP)

Same as Alternative C.

4.5.3.1.6. Cumulative Impacts

Past, present and reasonably foreseeable actions that are relevant to Wild and Scenic Rivers management include mining, oil and gas development, increases in motorized use on both water and adjacent lands, utility and transportation rights-of-way, recreation use, travel management, and use restrictions to protect wildlife, fisheries and vegetative resources.

Cumulative effects will accrue from BLM management decisions in addition to activities on surrounding lands during and beyond the life of the plan. The land base surrounding Big Windy Creek is BLM. However, the Birch Creek watershed includes state land. State lands are generally subject to resource development activities which may have a direct impact on water quality and other river related values. Development of lands along waterways could have an indirect impact on other rivers by increasing the importance of river related values of free-flowing, water quality, scenic, recreation, geologic, fish and wildlife habitats and populations, cultural and historic values on those other rivers.

Designation and management of ACECs and maintenance of wilderness characteristics, as well as measures to protect other resource values on adjacent federal lands would help protect river values. Proposed and current management in these areas would limit development and help maintain a more natural ecosystem with benefits to water quality and other river related values.

Protection of river related values including outstandingly remarkable scenic, recreation, and fish populations and habitat values along Birch Creek WSR would continue. No rivers on other federal lands in the subunit have been identified as having values of eligibility. Protection of river related values along the proposed addition of Big Windy Creek, with outstandingly remarkable scenic, geologic and wildlife values, would continue if designated by Congress. The BLM could implement other means to protect river values if these segments are not included in the system.

4.5.3.2. Research Natural Areas Steese Subunit

4.5.3.2.1. Alternative A (No Action)

Under this alternative, scenic values would be maintained in Research Natural Areas with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, camping, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by the development of hiking trails within the RNAs.

4.5.3.2.2. Alternative B

Under Alternative B, scenic values would be impacted the same as Alternative A.

4.5.3.2.3. Alternative C

Under Alternative C, scenic values would be maintained in RNAs with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by allowing camping and with the development of hiking trails and user-created travel routes from camping locations within the RNAs.

4.5.3.2.4. Alternative D

Under Alternative D, scenic values would be impacted the same as Alternative C.

4.5.3.2.5. Alternative E (Proposed RMP)

Under Alternative E, scenic values would be maintained in RNAs with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by allowing camping and with the development of hiking trails, user-created travel routes from camping locations within the RNAs and by allowing cross-country winter OHV use.

4.5.4. Social and Economic

4.5.4.1. Economics Steese Subunit

Summary of Effects

The largest economic effect in the Steese Subunit would be from mining. The proposed revocation of ANCSA 17(d)(1) withdrawals would result in the staking of new mining claims and additional suction dredging, and small- and large-scale placer mine operations in the subunit.

Employment associated with mining activity on BLM-managed lands in the Steese Subunit would be higher than in the Fortymile Subunit, about 36 full-time equivalent direct jobs under Alternative D. The effects would be the least under Alternative A and the greatest under Alternative D (Table 4.12, “Employment and Income Under Action Alternatives”).

4.5.4.1.1. Effects Common to All Alternatives

In addition to the effects discussed as common to all subunits in section 4.3.3.1 the following effects would occur in the Steese Subunit.

There are no revenues to the State of Alaska or the federal government that would result from coal, or oil and gas exploration. Similarly, no revenues would result from locatable mineral exploration and mining.

The discussion on effects from locatable minerals in the following sections is based on models developed by Stebbins (2009). See section 4.4.4.1.2 Fortymile Subunit, Effects from Locatable

Minerals for discussion of the Stebbins model, timeline for new claims, life of mines, and a background discussion of types of economic impacts.

4.5.4.1.2. Alternative A (No Action)

Effects would be limited to increase in currently allowed economic activities resulting from population growth.

Effects from Locatable Minerals

Alternative A would not allow new claims, as BLM lands are currently withdrawn from mineral entry. There are, however, existing mining operations on 7,000 acres of valid existing federal mining claims in the Steese Subunit. The following discussion for Alternative A is based on activities likely to occur on these existing claims. Mining activity is predicted to result in large and small-scale placer and suction dredge operations in the subunit.

Suction dredge mining results in the least economic effect of any mining method. Portable and inexpensive equipment is used. The model developed for suction dredge mining in all locations involves a crew of four (4) working 10 hours per day, seven days per week, 125 days per year. Based on one suction dredging operation, the current employment is two workers.

Small-scale placer mining uses a bulldozer, and excavator and a mobile wash plant to excavate and process gold-bearing gravel. In this model, a two-man crew works 12 hours per day, seven days per week, during a 130 day season. The camp includes one support person and a cook for a total of four workers. Current employment is 28 workers at seven operations.

Large-scale placer operations utilize excavation equipment larger than the small-scale model. In this model, two 2-man crews moving material; each work a 10-hour shift, seven days per week, during a 130 day season. Five additional employees, including a supervisor, skilled workers, and laborers; a total of nine workers are included in the model. As there are two current operations, the resulting employment is 18 workers.

Total current mining employment on BLM-managed lands in the subunit would be estimated at 48 part-year workers. Data prepared by the State of Alaska uses full-time equivalents. The full-time equivalent in the Steese Subunit would be approximately 17 workers, based on the Stebbins (2009) models.

Total employment by the Alaska minerals industry in 2012 was 4,366 full-time equivalent jobs (Athey 2013). This indicates less than one percent of the industry employment on BLM-managed lands occurred at Steese operations. The DGGs reported the average monthly wage for mining in Alaska during 2012 at \$8,422. Steese operations accounted for 1.7 million dollars in wages, annualized.

4.5.4.1.3. Alternative B

Effects from Fluid Leasable Minerals (oil and gas)

Seismic exploration could occur in the Steese Subunit on high potential oil and gas lands, but is unlikely during the life of the plan. Roadless exploration, in the form of seismic surveys, would occur in the winter after the tundra is frozen. Summer field sampling and reconnaissance would occur in using helicopter support.

Adjacent private land has been undergoing seismic surveys between 2010 and 2013. Initially, 2D seismic is collected, followed by 3D to identify potential reservoirs. The number of line miles shot on BLM lands, including those in this subunit, would be less than 20 miles.

Employment and spending accruing to work occurring on BLM-managed lands would be very low. The table below shows the estimated effect of seismic survey in the Yukon Flats Basin, allowing the reader the perspective of seismic work in the entire region. Jobs created during the seismic surveys include: Superintendent, surveyors, recording crew, and caterers. Professional and technical employment in interpretation of survey findings would also occur outside the planning area.

Table 4.16. Estimated Employment from Seismic Surveys

Estimated employment generated by seismic surveys (Annual Part- or Full-Time Jobs) ^a	Direct Jobs	Indirect and Induced Jobs	Total Jobs
Local Employment	30	3	33
Rest of Alaska	20–44	57	77–101
Total Statewide	50–74	60	110–134

^aSource: USFWS 2008a

Effects from Locatable Minerals

Under Alternative B, 34,000 acres would be opened to locatable mineral entry in the Steese Subunit and new mining claims could be staked.

Suction dredge mining would occur at the same level as Alternative A and no additional employment would result. Small-scale placer mining would increase by one to a total of eight operations. New employment would be four workers during a 125 day season. No additional large-scale placer operations would open, remaining at two in the subunit. No new employment would result.

Total new mining employment associated with BLM-managed lands in the Steese Subunit under Alternative B would be estimated at four-part year workers. The full-time equivalent in the would be less than two workers, based on the Stebbins (2009) models. The DGGs reported the average monthly wage for mining in Alaska during 2012 at \$8,422. New Steese operations would account for \$145,970 in wages, annualized.

Indirect and induced employment and income would also result from new mining. These would be higher than under the no-action alternative. See Table 4.12, “Employment and Income Under Action Alternatives” for Steese data and a comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative.

4.5.4.1.4. Alternative C

Effects from Fluid Leasable Minerals

Economic effects related to oil and gas would be the same as under Alternative B.

Effects from Locatable Minerals

Under Alternative C, 274,000 acres in the Steese Subunit would be opened to locatable mineral entry and the staking of mining claims.

There would be an estimated nine suction dredging operations, an increase of eight over Alternatives A or B. Resulting in new employment of 16 part-year workers. Small-scale placer mining operations would increase by 11 to a total of 18 operations. New employment would be 44 workers, during a 130-day season. There would be a total of four large-scale placer operations. As there are two current operations, the resulting new employment would be 18 workers, during a 130-day season.

Total new mining employment in the Steese Subunit under Alternative C would be estimated at 66 part-year workers. The full-time equivalent would be approximately 24 workers, based on the Stebbins (2009) models. The DGGs reported the average monthly wage for mining in Alaska during 2010 at \$8,345. New Steese operations would account for over \$2.4 million in wages, annualized.

Indirect and induced employment and income would also result from new mining. These outputs would be higher for Alternative C than Alternative B or E. See Table 4.12, “Employment and Income Under Action Alternatives” for Steese data and comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative and higher than under Alternative B.

4.5.4.1.5. Alternative D

Effects from Fluid Leasable Minerals

Economic effects related to oil and gas would be the same as under Alternatives B and C.

Effects from Locatable Minerals

Under Alternative D, 682,000 acres in the Steese Subunit would be opened to locatable mineral entry and staking of new mining claims.

The number of suction dredge operations would increase to 12, an increase of 11 over Alternatives A, B, or E, and three more than Alternative C. Resulting new employment would be 22 workers, during the 125 day season. Small-scale placer mining operations would increase by 17, to a total of 24 operations. New employment would 68 workers during a 130 day season. The number large-scale placer operations would be the same as Alternative C, a total of four. The resulting new employment from larger placer mines would be 18 workers, for a 130-day season.

Total new mining employment in the Steese Subunit under Alternative D would be estimated at 108 part-year workers. The full-time equivalent in would be approximately 39 workers, based on the Stebbins (2009) models. The DGGs reported the average monthly wage for mining in Alaska during 2012 at \$8,422. New Steese operations would account for over \$3.9 million in wages, annualized.

Indirect and induced employment and income would also result from new mining. These outputs would be higher for Alternative D than Alternatives B, C, or E. Please refer to Table 4.12, “Employment and Income Under Action Alternatives” for Steese data and a comparison of all subunits and alternatives.

State of Alaska revenue from Mining License Tax and Corporate Income Tax would also be proportionally higher under this alternative and higher than under other alternatives.

4.5.4.1.6. Alternative E (Proposed RMP)

Effects from Fluid Leasable Minerals

Economic effects related to oil and gas would be the same as under other Alternatives.

Effects from Locatable Minerals

Under Alternative E, 30,000 acres in the Steese Subunit would be opened to locatable mineral entry and staking of new mining claims. The economic effect would be the same as under Alternative B.

4.5.4.2. Environmental Justice Steese Subunit

Summary of Effects

Effects to the environmental justice population in this subunit are expected to be low. Increased employment opportunity caused by recreation use, mining, or seismic survey activity could benefit environmental justice populations in communities including Circle and Central.

4.5.4.2.1. Effects Common to All Alternatives

There will be little or no economic effect resulting from BLM decisions on BLM resource management activities; forest products; leasable minerals including Coal, Geothermal, Coal Bed Natural Gas, Non-energy Leasables, and Oil Shale; renewable energy; and lands and realty (see section 4.4.4.2).

Recreation activities would be slightly higher due to population growth in the region. Economic effects to communities slightly higher.

4.5.4.2.2. Alternative A (No Action)

There would be no effects.

4.5.4.2.3. Alternative B

Seismic exploration for oil and gas, and mining locatable minerals may result in additional jobs and income to local residents in the environmental justice population. These effects will be very low. Refer to Table 4.12, "Employment and Income Under Action Alternatives" to see total direct employment and income for all alternatives.

4.5.4.2.4. Alternative C

Seismic exploration for oil and gas, and mining locatable minerals may result in additional jobs and income to local residents in the environmental justice population. These effects will be very low. Please refer to Table 4.12, "Employment and Income Under Action

Alternatives” Employment and Income Action Alternatives to see total direct employment and income for all alternatives.

4.5.4.2.5. Alternative D

Seismic exploration for oil and gas, and mining locatable minerals may result in additional jobs and income to local residents in the environmental justice population. These effects will be very low and apply only to the action alternatives. Please refer to Table 4.12, “Employment and Income Under Action Alternatives” to see total direct employment and income for all alternatives.

The number of Special Recreation Permits would be slightly higher under Alternative D than in any other alternative. Environmental justice effects to communities in the area may be positive if employment in guiding or associated activities accrue to local populations.

4.5.4.2.6. Alternative E (Proposed RMP)

Economic Effects would be the same as Alternative B.

4.5.4.3. Social Conditions Steese Subunit

Summary of Effects

Most impacts to individuals and groups are minor to moderate in part because other opportunities exist for the activities within the planning area on nearby State of Alaska or a Native corporation lands. While it is possible for impacts for multiple resources to adversely affect individuals and groups in a cascading fashion, most communities exhibit sufficient resiliency to adapt to the changes. The only community where local concern was expressed about community viability before consideration of impacts was Central, and it was relayed that since the Circle Hot Springs closed, the town has been in decline, and the school is one pupil from closing. The potential lack of this key component of social web is an indicator of impaired resiliency, and the community may have greater difficulty adapting to some impacts.

4.5.4.3.1. Effects Common to All Alternatives

The following programs would have minor net positive or negative effect to social conditions and are not analyzed further: Air, Cave and Karst Resources, Cultural and Paleontological Resources, Fish and Aquatic Species, Soil Resources, Special Status Species, Vegetative Communities, Visual Resources, Water Resources, Wilderness Characteristics, Wildland Fire Ecology and Management, Wildlife, Fluid and Solid Leasable Minerals, Salable Minerals, Recreation, Travel Management, and Special Designations. For further discussion, see Effects Common to All Alternatives in all Subunits.

Effects from Forest and Woodland Products

Few residents live close enough to public land for it to be a convenient source of firewood. One exception is Circle, however this land may be disposed of to consolidate BLM lands and activities. Given the other nearby sources, including recent fire-scorched trees, there is no significant impact to communities in the planning area.

Effects from Land and Realty

Withdrawals have limited mining activity with the planning area. To the extent that lands remain closed to mineral entry, mining will cease to be an aspect of public land use within the planning area. No remnant activities will occur on public land to give context to the various displays of the mining era. Reduced opportunities for participation at a lifestyle or recreational level will reduce individual well-being, and community well-being in Center if opportunities for mining are not available on other lands.

Effects from Locatable Minerals

Communities relying on placer mining, like Central, are less viable as mining activity decreases, unless some other economic activity replaces mining. Mining opportunities also exist on state land in the area.

Effects from Subsistence

Preventing or reducing placer mining may improve subsistence catches of some fish species. This will increase the sense of well-being among populations targeting such species, and will increase food security if other food sources are displaced by wildland fire, climate change, or other factors.

4.5.4.3.2. Alternative A (No Action)

Effects from Land and Realty; Locatable Minerals

Effects of maintaining ANCSA 17(d)(1) withdrawals may be decreased mining activity, eroding the community character and well-being of communities in the subunit, such as Central. The extent of activity will be determined by the mineral potential of the available lands.

4.5.4.3.3. Alternative B

Effects from Land and Realty; Locatable Minerals

Effects of lifting ANCSA 17(d)(1) withdrawals may be a minor increase in mining activity, enhancing the community character and well-being of communities in the subunit, such as Central. The extent of activity will be determined by the mineral potential of the available lands. Since 3 percent of the acreage in the subunit will be available to mining, federally qualified subsistence users, those that value resource protection, some recreationists, and perhaps other groups may experience some decline in quality of life either directly in their activities, or indirectly.

4.5.4.3.4. Alternative C

Effects from Land and Realty; Locatable Minerals

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of communities in the subunit, such as Central. The extent of activity will be determined by the mineral potential of the available lands. Increased activity would result in new employment of 66 seasonal workers and over \$2 million in personal income for the employees, providing a significant economic infusion to an area with few employment opportunities. That effect may result in an increased well-being and sense of security for those employees and area merchants. The effects may include increased traffic, higher home prices, and other consequences that result in a decreased well-being and quality of life for other members of the community. Since 22 percent of the acreage in the subunit

will be available to mining, some groups may experience a more significant decline in quality of life either directly or indirectly. These include federally qualified subsistence users, those that value resource protection, some recreationists, and perhaps other groups.

4.5.4.3.5. Alternative D

Effects from Land and Realty; Locatable Minerals

Effects of lifting ANCSA 17(d)(1) withdrawals may be increased mining activity and increased diversity of operations, enhancing the community character and well-being of some communities in the subunit, such as Central. The extent of activity will be determined by the mineral potential of the available lands. Increased activity would result in new employment of 108 workers and nearly \$4 million in personal income for the employees, providing a significant economic infusion to an area with few employment opportunities. That may result in an increased well-being and sense of security for those employees and area merchants. The effects may include increased traffic, higher home prices, and other consequences that result in a decreased well-being and quality of life for other members of the community. Since 54 percent of the acreage in the subunit will be available to mining, other groups such as federally qualified subsistence users, those that value resource protection, and some recreationists may experience a significant decline in quality of life either directly in their activities, or indirectly.

4.5.4.3.6. Alternative E (Proposed RMP)

Effects from Land and Realty; Locatable Minerals

Effects of lifting ANCSA 17(d)(1) withdrawals may be a minor increase in mining activity, enhancing the community character and well-being of communities in the subunit, such as Central. The extent of activity will be determined by the mineral potential of the available lands. Since 2 percent of the acreage in the subunit will be available to mining, federally qualified subsistence users, those that value resource protection, some recreationists, and perhaps other groups may experience some decline in quality of life either directly in their activities, or indirectly.

4.5.4.4. Subsistence Steese Subunit

Summary of Effects

Primary impacts on subsistence resources and uses would be from decisions on mineral development and travel management. Impacts include user conflicts (displacement of subsistence hunters), displacement of resources, and potential declines in resource availability due to disturbance in critical habitats or during critical times (e.g., calving periods). Alternatives A and E allow the most latitude for summer use of OHV in the Steese Subunit (1,083,000 acres open to summer cross-country use and 142,000 acres closed to summer OHV use). For OHV purposes the period considered as summer is May 1 – October 14 (section 2.7.2.1.2.6). Interim travel management would be in effect in Alternative E until the Travel Management Plan would be developed within five years after signing of the Steese ROD. Alternative D, which allows the most mineral development, would have the highest negative impacts on subsistence. Alternative B, which limits use of OHV the most, designates transportation corridors and right-of-way avoidance areas, would confer the highest levels of protection to subsistence resources and uses.

In Alternative B – D, where permits for summer use of OHV would be required, qualified residents participating in federal subsistence opportunities would need a permit for summer OHV use. Areas where the permit would apply are Primitive, Semi-Primitive and Backcountry Recreation Management Zones. The permit requirement would be considered a “reasonable regulation” under ANILCA Title VIII Section 811(b).

Recreation in the Steese Subunit is concentrated along the Birch Creek WSR and Pinnell Mountain Trail and throughout the subunit during hunting seasons. Impacts to subsistence resources and uses from recreation management would be the result of travel management prescriptions and are discussed under travel management.

Alternatives B–D include designation of the Steese ACEC to protect caribou calving and post-calving habitat and Dall sheep habitat. Although the size of the ACEC varies among alternatives, the additional protection of these habitats would benefit subsistence resources. Management prescriptions for the ACECs under alternatives B–D are the same and discussed in sections 2.8.2.1.3.1 (Alternative B), 2.8.2.2.3.1 (Alternative C), and 2.8.2.3.3.1 (Alternative D).

In Alternative E crucial caribou and Dall sheep habitat is recognized and is the same size and with same management decisions as the ACEC in Alternative C. Management prescriptions for the area of crucial caribou and Dall sheep habitat would:

- Limit activities within one mile of identified ungulate mineral licks from May 10 - August 31;
- Allow summer motorized vehicle use on approved routes where compatible with protection of caribou and Dall sheep habitat;
- Require a permit for cross-country summer motorized vehicle use;
- Monitor winter motorized use and restrict such use if impacting sheep distribution;
- Close to leasable and locatable minerals
- Require a *Caribou and Dall Sheep Impact Assessment and Mitigation Plan*, for surface disturbing or intensive activities, unless the AO officer determines that potential impacts are very low;
- Do not allow permanent roads (subject to ANILCA Title XI);
- Roads may be closed during caribou calving and post-calving and Dall sheep lambing periods;
- Minimize footprints of facilities and require collocation of facilities and access; and
- Establish minimum flight level above ground level for permitted use of aircraft.

Many resource decisions, such as those for soil, water, air, wildlife, Special Status Species, special designations, and fish and aquatic resources, would benefit subsistence resources (see 4.3.4.5 Impacts Common to All Subunits Subsistence.)

Little or no subsistence fishing occurs on the BLM-managed lands in the Steese Subunit. In general, land use activities permitted in the area, such as development of transportation corridors and mineral deposits, would affect water quality at downstream locations and fish spawning or rearing areas, indirectly impacting subsistence fisheries harvested off BLM-managed lands. Stipulations to mitigate impacts to water quality and fish spawning and rearing areas would be

attached to land use permits. Locatable mineral development opportunities vary among the alternatives and would be expected to contribute to indirect and cumulative impacts on fisheries resources. Few rights-of-way applications, other than those from the BLM, have been received over the past three decades and it is anticipated that few would be requested occur over the life of the plan.

Black and brown bear, caribou, moose, sheep, furbearers, ptarmigan, grouse, and small game are recognized by the Federal Subsistence Management Program as subsistence wildlife resources in the Steese Subunit. Lifetime use of these resources by federally qualified subsistence users is documented by Caulfield (1979, 1983). Birch Creek residents indicated a lifetime use of trapping and hunting furbearers within the Steese National Conservation Area in the headwaters of Preacher Creek and moose and black bear hunting takes place on both mouths of Birch Creek from the Yukon River to the Steese Highway crossing. Salmon fishing takes place on the Yukon River and fishing for whitefish, sheefish and pike occurs along Upper and Lower Mouth Birch Creek. Grayling fishing occurs along Birch Creek to its crossing by the Steese Highway. Muskrat and waterfowl hunting areas stretch from Birch Creek village downriver to the Yukon. Oral history accounts and archeological findings documented by Caulfield (1983) indicate that bands of the Birch Creek people, Dendu Gwich'in, lived in the foothills of the White Mountains using primarily caribou and sheep. In a study to document subsistence land use patterns, Caulfield et al. (1983) recorded place names for Birch Creek and other communities. Two locations on the north boundary of the Steese National Conservation Area were described, including Dinjik vadzaih tthal or moose and caribou fence on Birch Creek. Preliminary data on subsistence land use for Birch Creek village from studies conducted by the Council of Athabaskan Tribal Governments in 2005 and 2007 show that traditional use areas for Birch Creek are completely within the boundaries of the Yukon Flats Refuge (CATG unpublished 2015).

Fishing for salmon occurs adjacent to and below the current village of Circle (Caulfield 1979). Areas used to hunt moose and bear are accessed by riverboat along the Yukon River, upriver as far as the Kandik River and down river as far as Birch Creek. Hunting for caribou historically occurred around Medicine Lake and along the Steese Highway near Central. During public comment meetings for the Draft RMP/Draft EIS in Circle (April 2012) residents attending the meeting indicated that they do not use the Steese National Conservation Area for harvest of subsistence resources. Lands surrounding Circle are a checker board of village corporation and State and villages-selected lands. Selected lands around Circle are low priority and will likely revert to BLM management. Residents of Circle also use these lands around the village for harvest of wildlife and small game (Caulfield 1979). Residents of Fort Yukon also report harvest of subsistence mammal species in the Steese Subunit on lands around Circle (Sumida and Alexander 1985).

The village of Beaver is near the boundary of this subunit and within the Yukon Flats NWR. Subsistence land use patterns for the community have been documented by Sumida (1989) and by CATG (2015). Subsistence resource use by Beaver was not identified for any BLM-managed lands in the subunit.

Residents of the Central area are contemporary users of caribou in the south unit of the Steese National Conservation Area.

Little or no use of subsistence wildlife resources has been documented by other qualified users largely due to studies of subsistence land use being centered on local communities, often center of specific years, and lifetime use. Additionally, patterns of use are changing. Based

on registration permit and harvest ticket reports residents of other communities designated as rural by the Federal Subsistence Board participate in harvest activities in the subunit, including Tok, Anderson, Nenana, Delta Junction, Kodiak, Petersburg, Fort Yukon, Haines, Adak, Nome, Gustavus, Barrow, Fort Greely, Manley Hot Springs and Glennallen.

Some land use decisions under the alternatives would impact vegetative communities and directly and indirectly impact subsistence fish, wildlife and vegetative resources harvested on and off BLM-managed lands. These are discussed under the alternatives below and in the effects on fish and aquatic resources, wildlife and vegetation sections of this chapter. Forest resources may also be impacted subsistence uses; however, little subsistence use of wood or forest products occurs on BLM-managed lands in this subunit.

Subsistence fish and wildlife resource availability and opportunity have declined or shifted in many areas across the planning area. For example, salmon resources important for subsistence use have declined in the Yukon River over the past several decades. Increased dependence on other subsistence resources, such as moose and caribou, has become more important and would be expected to continue to increase in the Steese, as well as Fortymile and White Mountains Subunits, over the life of the plan. No significant restriction on subsistence uses from changing hunting patterns by all users would be expected. If issues were to occur from this situation, subsistence users would seek redress through the Federal Subsistence Board to change regulation, Customary and Traditional use determinations, and as appropriate apply the ANILCA Section 804 process (section 3.5.3.2.).

Measures to mitigate the impacts of permitted land use actions on subsistence use would be attached as stipulations to authorizing documents. Permitted land use actions would include timber harvest, mining, rights-of-way, and other actions. Based on the evaluation that follows, no significant restrictions to subsistence resources or uses would occur from decisions in Alternatives A, B, C, and E. Impacts to subsistence resources and uses from Alternative D could be significant. Alternative D would allow development of locatable minerals in portions of the current White Mountains caribou calving and postcalving habitat, historic Fortymile calving and postcalving habitat, and current migration habitat, and Dall sheep mineral lick areas and movement corridors. Alternative D also provides the least amount of protection to streams, some of which are classified as anadromous, and could impact downstream fish habitat, depending on the level of interest in developing locatable minerals (Table 2.28).

4.5.4.4.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Decisions for the management of forest and woodland products vary widely over the five alternatives. Alternative A would best protect subsistence resources and uses as no commercial use would be permitted in the Steese National Conservation Area. Alternative C and D would have the greatest impact from commercial timber and salvage harvest.

Commercial use of timber varies among the alternative from no commercial use in Alternative A to commercial timber sales on most BLM-managed land in the subunit (Alternatives C and D). Prohibitions on commercial use would benefit most subsistence resources. Commercial timber salvage sales would be allowed on all BLM-managed lands in the Steese Subunit in Alternatives C-E.

Saw timber within the area is not considered marketable due to the remote location of stands of suitable trees; however, harvest of timber for local biomass projects could occur over the life of the plan particularly after fire or where lands managed by BLM are within an accessible distance from communities. Over time it would be expected that local communities would harvest timber for biomass projects farther from villages, including in BLM-managed lands. Direct impacts on subsistence use from commercial timber harvest or timber salvage sales would be expected to be negligible but indirect impacts could occur if abundance or availability of wildlife and other subsistence resources would be reduced. Reductions in availability or abundance would not be expected from these management prescriptions.

Personal use of timber ranges from no use within the SRMA to allowed on all BLM-managed land in the subunit. Residents of Central and the surrounding area are the primary federally qualified subsistence users of timber, logs and firewood adjacent to the SRMA. Residents harvest most firewood off BLM lands within old fire boundaries around Central, primarily along the highway northeast of the community (Pers. comm. Glanz 2009). Subsistence use of timber resources would be available through free-use permits on undesignated recreation lands, including lands surrounding Circle that have been selected but not conveyed.

Ethnographic studies indicate that little subsistence use of forest and woodland products occurs on BLM-managed lands in the subunit other than berry picking. Requests for free-use permits for personal use have been rare and no requests for free-use permits for subsistence harvest have been documented over the past 25 years. Therefore direct impacts on subsistence use of forest and woodland products would be expected to be low.

Based on this analysis of use, decisions on timber regardless of alternative would not impact subsistence resource or uses because applications for these uses would be few and likely for relatively small areas. Any application for commercial or other use would require thorough analysis and an ANILCA Section 810 evaluation and finding.

Effects from Solid Leasable minerals

No impacts would occur to subsistence uses or resources from exploration or development of coal or related activities in the Steese Subunit under any alternative. No coal development will occur in the subunit because a decision for coal leasing is deferred under this plan. An amendment to the RMP would be required before coal leasing could be authorized.

Effects from Salable Minerals

Although the lands open to salable minerals varies by alternative, demand would not be expected to vary. Impacts to subsistence would be minimized through permit stipulations. Few mineral sales have been authorized in the past and few would be anticipated in the future as ample sand and gravel is available on state lands. Under the action alternatives, SOPs would apply and include reclamation and other best management practices. Impacts to subsistence uses and resources would be minimal under all alternatives.

4.5.4.4.2. Alternative A (No Action)

Under the No Action Alternative present land management practices and levels of resource used would continue in accordance with existing laws, regulations, and policy. Land use activities would continue to be analyzed through the NEPA process and include an ANILCA Section 810(a)

evaluation and finding. Through these processes, appropriate stipulations would be developed to mitigate any impacts identified.

Effects from Lands and Realty

State lands within the boundaries of the Steese National Conservation Area have been identified for acquisition through exchange under this alternative. No adverse impacts to subsistence uses or resources would be expected from this action. Management of subsistence resources and uses would become more consistent as land status is simplified. Consolidation of lands would reduce confusion over which regulations apply to which lands.

Four transportation corridors are identified in the Steese National Conservation Area. Rights-of-way would be constrained to these corridors if possible. Only one improvement has been made in the transportation corridors since signing of the existing ROD (BLM 1986a). Consolidation of rights-of-way would benefit subsistence resources and uses by protecting wildlife and fish habitat and vegetative communities and reducing disturbance to wildlife. No impacts would be expected from lands and realty prescriptions in this Alternative.

Effects from Leasable Minerals

All lands would be withdrawn from fluid and solid leasable minerals and there are no existing leases. No impacts to subsistence resources or uses from leasing minerals would occur under this alternative.

Effects from Locatable Minerals

All lands are withdrawn from mineral entry. Activity would continue to be limited to valid existing claims that predate the withdrawals. An environmental assessment would be completed for each plan of operation. Stipulations would be attached to new authorizations and operators must comply with BLM reclamation standards, which minimize the impacts on subsistence resources through stabilizing stream channels and rehabilitation of fish and wildlife habitat.

Effects from Travel Management

Under Alternative A, most BLM lands would be open to cross-country use of OHV 1,500 pounds and less GVWR without a permit. For vehicles greater than 1,500 pounds GVWR used off valid rights-of-way, a permit could be authorized for access to inholdings or with an authorized Plan of Operations. No summer OHV use would be allowed in Birch Creek and the Primitive management units (142,000 acres). The Primitive management units (Map 48), would be open to winter cross-country use by snowmobile 1,500 pounds GVWR or less. Motorboats would be allowed in the Birch Creek WSR, however no airboat or hovercraft use would be allowed in the Steese National Conservation Area. All non-motorized uses would be allowed and aircraft use would be unrestricted. The RNAs (3,000 acres) would be closed to all motorized use.

User pioneered trails would be more likely to occur where cross-country OHV use would be allowed. User pioneered trails cause degradation of soils and vegetation, resulting in rutting, erosion and reduced water quality. Cross-country use would also have direct impacts on resource abundance, distribution and location, especially during periods of concentrated use of OHV, such as late summer and early fall hunting seasons (section 4.5.1.7. Wildlife). Summer cross-country use would allow hunters into areas where wildlife would be concentrated. Based on registration permit returns where hunters indicated the means of travel, during 2010–2011, a minimum of 67 percent or 923 of 1,359 caribou hunters in the Steese Subunit used OHV to hunt. It is estimated

that the participation is similar for moose hunting, however isolating data for the Steese National Conservation Area is difficult since data are for Game Management Unit 25C, which includes the White Mountains NRA, the hunt is by harvest ticket and harvest ticket return is very low (Gasway et al. 1992,).

Impacts to subsistence resources and uses could become significant over the life of the plan if other use (particularly hunting) increases as projected (see also Chapter 4 Recreation). Subsistence hunters avoid areas while and where others are present and attribute noise and activity associated with hunting, particularly of caribou, as turning game away from harvest areas (Caulfield 1983). Rural hunters frequently have testified at the Eastern Interior RAC meetings that the influx of non-local hunters and the impact of that hunting pressure force local hunters to move farther away and hunt in new places (EIRAC 2014). Relief from these conflicts would be independent of the RMP and sought through the Federal Subsistence Board process. The process would apply through regulation of seasons and bag limits on federal public land, Customary and Traditional use determinations and as appropriate through the ANILCA Section 804 provisions.

4.5.4.4.3. Alternative B

Effects from Lands and Realty

Acquisition of lands within the Steese National Conservation Area, consolidation of scattered parcels around Circle, and disposal of lands identified for disposal will simplify land status and benefit management of subsistence resources and uses. No adverse impacts are expected from these actions.

Two transportation corridors are identified in Alternative B. The Steese ACEC, Mount Prindle RNA and Birch Creek WSR Corridor would be right-of-way avoidance areas, except where transportation corridors cross these areas. No adverse impacts are expected to subsistence resources or uses from these decisions.

Land tenure decisions, particularly consolidation of scattered parcels of BLM-managed lands around Circle, would benefit subsistence users by simplifying land status and interpretation of which hunting regulations apply to the lands.

Effects from Leasable Minerals

Approximately nine percent of BLM lands within the Steese Subunit would be open to all leasable minerals under Alternative B. Nominations for lease sales would be analyzed through the NEPA process. Seismic exploration could occur on high potential oil and gas lands during the life of the plan (Map 87). Geophysical exploration would require removal of trees from 10–20 miles of straight line transects, each 14 feet wide. The impact to subsistence resources would be minimal and to the extent possible, mitigated through the authorization of the action.

Effects from Locatable Minerals

Only nine percent of BLM lands would be open to locatable minerals. The locatable mineral potential is low for open areas (Maps 87 and 26). As in Alternative A, an environmental assessment and ANILCA Section 810 evaluation and finding would be completed for each operation. SOPs would include reclamation standards and other best management practices. Impacts to subsistence uses and resources would be minimal.

Effects from Travel Management

Under Alternative B, RNAs (3,000 acres) would be closed to the use of all OHVs. Travel management prescriptions on the remaining lands would be limited to cross-country winter use of snowmobiles 1,000 curb weight and less (no summer use of OHV). Aircraft would be generally unrestricted. Use of any other OHV would require a permit, including use for subsistence purposes. Limits on use of OHV would in general protect subsistence resources and habitats and would be considered a benefit.

Use of OHV by subsistence harvesters would require a permit in RNAs and for summer use in all other areas, and would be considered a reasonable regulation (ANILCA Section 810(b)). In areas where access is limited for motorized vehicles, federally qualified subsistence users, subject to reasonable regulation and with a free permit, can use OHV or snowmobiles or for subsistence purposes as allowed under ANILCA Section 811 (section 2.6.3.7 Travel Management).

Obtaining a free use permit for motorized access on BLM-managed lands where access would be limited would not be a significant burden on subsistence users. Assumptions for the analysis of impacts to federally qualified subsistence hunters from the process of getting an access permit are in section 4.2.1.5 of this chapter. The permits would be readily available. They would be in addition to the licensing and permitting requirements for all residents who harvest resources in the Steese Subunit, including hunting, trapping and fishing licenses, registration permits for hunting caribou, and harvest tickets for other hunts or game species. In cases where a federally qualified subsistence user would be a designated hunter for another federally qualified subsistence user, a federal subsistence designated hunter permit would also be required. Licenses, permits and harvest tickets must be carried in the field when harvesting fish and wildlife resources, including the OHV permit.

The subsistence priority in these areas would be further protected since enforcement would be possible based on possession of a permit. Managers would be able to gain understanding of use through the number of permits issued and impacts of the use in areas that have been closed to summer OHV for the past three decades. Knowledge of use would enhance protection of sensitive subsistence resources and habitats important to those resources.

Areas currently or subsequently closed by an administrative action because soil and vegetation characteristics would not sustain OHV use or due to excessive damage from OHV use would also be closed to summer use by federally qualified subsistence users.

4.5.4.4.4. Alternative C

Effects from Lands and Realty

Alternative C differs from Alternative B in that no right-of-way avoidance areas would be identified. Impacts to subsistence would be expected to be minimized through permit stipulations. Effects from changes in land tenure would be the same as Alternative B.

Effects from Leasable Minerals

Approximately twenty percent of BLM-managed lands would be open to all leasable minerals under Alternative C. Although a larger area would be open to leasable minerals, effects would essentially be the same as Alternative B. Nominations for lease sales would be analyzed through new NEPA documentation and ANILCA Section 810(a) evaluation and finding.

Some high potential areas occur in the Preacher Creek area of the North Steese National Conservation Area Unit. Seismic exploration could occur on these high potential oil and gas lands. Geophysical exploration would require removal of trees from 10–20 miles of straight line transects, each 14 feet wide. The impact to subsistence resources and uses would be minimal and to the extent possible, mitigated through the authorization of the action. No fluid mineral leasing, exploratory drilling or development would be expected to occur during the life of the plan.

Effects from Locatable Minerals

Approximately twenty percent of BLM lands would be open to locatable minerals under Alternative C. The mineral potential is high for most of the open areas (Maps 87 and 28). Demand for locatable minerals is expected to be high (approximately 15 new small-scale placer mines anticipated). Operations would be subject to NEPA analysis and would include reclamation plans, SOPs, stipulations, and other best management practices. Reclamation standards would require rehabilitation of fish and wildlife habitat. Impacts from this level of new mining would not significantly restrict subsistence uses and resources.

Effects from Travel Management

Alternative C differs from B in the location and size of the RMZs and that off-route travel for game retrieval would be allowed in some RMZs. Cross-country winter use of snowmobiles 1,000 curb weight and less would be allowed in all but the RNAs (3,000 acres).

Primitive, Semi-Primitive and Backcountry RMZs within the Steese National Conservation Area and Birch Creek would allow no summer OHV use (680,000 acres). Summer use of OHV 1,000 pounds curb weight and less would be limited to existing trails in the undesignated recreation area and Middlecountry and Frontcountry RMZs, except for retrieval of game, which is allowed off-trail (566,000 acres). Larger OHVs, up to 10,000 pounds curb weight would be allowed on existing roads only. A permit or approved Plan of Operations would be required for all other use.

Limits on OHV and other motorized uses, such as restrictions on summer use or to existing trails, would be decisions to protect areas from use that cannot be sustained due to conditions such as fragile soils, vegetation, sensitive wildlife habitat, and wetlands. Any use in these areas would cause long-term damage (greater than five years). Limits on use of OHV would in general protect subsistence resources and habitats and would be considered a benefit. Provisions allowing game retrieval off trails could increase participation in federal and state hunts and impact availability of wildlife resources. For example, as opportunities to harvest caribou shift west due to changes in seasonal herd distribution and movements, it would be anticipated that participation by all hunters would shift to these road and trail accessible areas. Provisions that allow for off-trail game retrieval could be add incentive. Where this could impact subsistence use, relief would be with the Federal Subsistence Board through changes to seasons and bag limits, Customary and Traditional use designations, and as appropriate the ANILCA Section 804 process.

Where permits are required, use of OHV by subsistence harvesters would also require a permit and would be considered a reasonable regulation. In areas where limits on summer and/or winter OHV use would be applied, federally qualified subsistence users, subject to reasonable regulation and with a permit, can use snowmobiles, motorboats, or other means of surface transportation for subsistence purposes as allowed under ANILCA Section 811 (see section 2.5).

Impacts to federally qualified subsistence users from obtaining a free use permit for motorized access on BLM-managed lands where access would be limited for casual users would not be a

significant burden. Impacts are analyzed in the Travel Management section 4.5.4.4.3 Alternative B.

Further analysis of impacts from travel management, such as impacts on wildlife resource abundance, distribution and location, are discussed in Wildlife section 4.5.1.7.

4.5.4.4.5. Alternative D

Impacts to subsistence resources and uses from Alternative D could be significant. Alternative D would allow development of locatable minerals in portions of the current White Mountains caribou calving and postcalving habitat, historic Fortymile calving and postcalving habitat, and current migration habitat, and Dall sheep mineral lick areas and movement corridors. Alternative D also provides the least amount of protection to streams, some of which are classified as anadromous, and could impact downstream fish habitat, depending on the level of interest in developing locatable minerals.

Effects from Lands and Realty

Alternative D is the same as C in that there are no designated transportation corridors or right-of-way avoidance areas. Impacts to subsistence uses would be minimized through permit stipulations. Effects from changes in land tenure would be the same as Alternative B.

Effects from Leasable Minerals

Approximately fifty-four percent of BLM lands would be open to all leasable minerals under Alternative D. Impacts would be essentially the same as Alternative C.

Effects from Locatable Minerals

Approximately fifty-four percent of BLM lands would be open to locatable minerals under Alternative D. The mineral potential is medium to high for most of the open areas (Maps 87 and 30). Demand for locatable minerals would be expected to be high.

Impacts to important subsistence wildlife resources in the subunit, primarily White Mountains and Fortymile caribou, include changes in migration patterns and loss of habitat through fragmentation (roads) or direct disturbance (section 4.5.1.7 Wildlife). Mining of new as well as existing claims would impact fisheries within the subunit and downstream beyond the life of the plan (section 4.5.1.2). Impacts to subsistence uses and resources from locatable minerals could be significant, depending on interest in new developments. Operations would be subject to NEPA analysis and ANILCA Section 810(a) evaluation and finding. Authorizations for mining would require reclamation plans that comply with 43 CFR 3809 standards for fish and wildlife habitat rehabilitation. SOPs and stipulations to help minimize impacts to subsistence use and resources would be attached to authorizations.

Effects from Travel Management

This alternative differs from Alternatives B and C in the location and size of the RMZs (Map 51) and that cross-country summer use of OHV 1,000 curb weight and less would be allowed in the undesignated recreation area and Middlecountry and Frontcountry RMZs (733,000 acres). Although Alternative D would allow for the greatest latitude in OHV use by subsistence and other users, it would also have the highest potential for conflicts among resource uses. Impacts to subsistence users would occur from their avoidance of areas used by recreational hunters.

Subsistence hunters also perceive that other hunters cause game animals to turn away from their hunting areas, such as caribou during late summer-early fall migrations. The full discussion of displacement of subsistence users is in Effects from Travel Management under section 4.5.4.4.2 Alternative A (No Action).

User pioneered trails would occur where cross-country OHV use is allowed. User pioneered trails cause degradation of soils and vegetation, resulting in rutting, erosion and reduced water quality. Cross-country use would also have direct impacts on resource abundance, distribution, movement, and location, especially during periods of concentrated use of OHV, such as late summer and early fall hunting seasons. Impacts to subsistence resources and uses could become significant over the life of the plan if recreational use (including hunting) increases as projected (section 4.5.2.2.6 Recreation, Cumulative Impacts).

Impacts to subsistence uses could be felt on and off federal lands if increased access to resources resulted in a reduction of abundance of wildlife (harvest), reduction in availability (change in distribution and location), or a limitation on access (physical or legal barriers). For example, as opportunities to harvest caribou shift across the state, participation in general hunts accessible by road, trails and cross-country OHV could receive higher participation. This could occur especially where less restrictive methods for hunting exist (registration permit vs drawing). Hunts in these areas close early, often within a day or two of opening and before caribou are accessible to rural communities. Redress to maintaining a priority for subsistence uses under ANILCA Title VIII would be through the federal subsistence processes and the Federal Subsistence Board.

4.5.4.4.6. Alternative E (Proposed RMP)

Major differences between Alternative C (Draft RMP Preferred Alternative) and Alternative E (Proposed RMP) include adopting decisions from Alternative B for Riparian Conservation Areas that would increase protection for streams, closing the Steese National Conservation Area and RCAs to locatable and leasable minerals, and adopting interim management while travel management plans are developed within five years of signing the Record of Decision. Effects on subsistence resources and uses of other decisions for Alternative E would be the same as discussed under common to all.

Land tenure and land use authorizations would be the same as Alternative C.

Effects from Leasable and Locatable Minerals

All of the Steese National Conservation Area and the ten RCAs would be closed to leasable and locatable minerals. Impacts would be the same as Alternative A.

Effects from Travel Management

Interim Travel Management for Alternative E would be the same as for Alternative A (No Action) except a new weight and width limitation on snowmobiles and summer OHV would be implemented, airboats and hovercraft would be allowed within the Steese National Conservation Area, and snowmobiles will be allowed in the RNAs. Within five years of signing the Record of Decision a travel management plan would be completed. The plan could vary substantially from the interim management. NEPA analysis of impacts from snowmobiles in the RNAs and airboats and hovercraft could result in limits on these uses.

A 1,000 pound curb weight and 50 inches width limitation on snowmobiles would replace the 1,500 pound GVWR limitation, and a 1,000 pound curb weight and 50 inches width limitation on summer OHVs would replace the 1,500 pound GVWR limitation. In Alternative A and E 142,000 acres, including Birch Creek WSR, would be limited to no summer use. Federally qualified rural residents would also observe this limit on summer OHV use. Interim management in Alternative E differs from Alternative C in that RMZs open to summer OHV would not be limited to designated trails and the area open would be almost twice the area open in Alternative C.

Although limitation of OHV to designated trails (Alternative B and C) would reduce the benefit of cross-country access for federally qualified subsistence users, it would also protect fish and wildlife habitat and important subsistence resources by limiting access by all users. Under Alternative E, impacts on subsistence resources from cross-country use would be expected to increase as described in the assumptions for analysis as population trends are projected to increase and OHV technology continues to advance.

Rural hunters frequently have testified at the Eastern Interior RAC meetings that the influx of non-local hunters and the impact of that hunting pressure force local hunters to move farther away and hunt in new places (EIRAC 2014). Travel management in Alternative E, like Alternative A, could perpetuate the displacement of local hunters and result in higher costs to federal subsistence hunters in lost opportunity and in obtaining wild game. Although impacts would occur they would not be expected to significantly restrict subsistence use or resource abundance or availability on BLM-managed lands in the Steese Subunit. Physical or legal barriers to access would not be expected. Maintaining a priority for subsistence uses under ANILCA Title VIII would be through the federal subsistence processes and the Federal Subsistence Board.

The prohibition on airboats and hovercraft in the non-navigable segments of Birch Creek WSR would be removed. Both means of travel allow for access in very low water conditions thereby allow entry into areas where no motorized watercraft have been able to previously travel. Few subsistence users have access to hovercraft or airboats therefore most use would be from casual users.

The Steese National Conservation Area and Birch WSR have been closed to hovercraft and airboats since the signing of the Steese RMP in 1986. No use of hovercraft and airboats in these designated areas prior to that has been documented; however, it is estimated that this type of use would increase over the life of the RMP. An assumption for analysis of this method of access is that up to 20 percent of users would engage in use of airboats and hovercraft. Recreational use would increase over the life of the plan and closures on use of airboats for harvest or transport of moose in other areas, such as Minto Flats, could result in displacement of hunters into the Steese National Conservation Area under Alternative E, increasing competition with subsistence users for wildlife resources.

Over the life of the plan, impacts from airboats and possibly hovercraft could restrict subsistence use. Impacts could include localized and short-term alteration of wildlife availability, distribution, and movements throughout the state hunting seasons. Members of the public testified to the Alaska Board of Game that “airboat use by moose hunters interferes with traditional spot and stalk and still-hunting techniques used by subsistence moose hunters” (Interior Alaska Airboat Assoc. v. State, Board of Game (3/2/01) sp-5369; on line at: <http://www.touchngo.com/sp/html/sp-5369.htm>). Relief from user conflicts would be thorough the Federal Subsistence Board process.

User pioneered trails would be more likely to occur where cross-country OHV use would be allowed. User pioneered trails cause degradation of soils and vegetation, resulting in rutting, erosion and reduced water quality. Cross-country use would also have direct impacts on resource abundance, distribution and location, especially during periods of concentrated use of OHV, such as late summer and early fall hunting seasons. Summer cross-country use would allow hunters into areas where wildlife would be concentrated. Based on registration permit returns where hunters indicated the means of travel, during 2010–2011, a minimum of 67 percent or 923 of 1,359 caribou hunters in the Steese Subunit used OHV to hunt. It is estimated that the participation would be similar for moose hunting, however isolating data for the Steese National Conservation Area is difficult since data are for Game Management Unit 25C, which includes the White Mountains NRA. Additionally, moose hunting in the subunit is by harvest ticket, and harvest ticket return rates are low (Gasway et al. 1992).

Impacts from interim travel management to subsistence resources would be short-term (5 years) while the Travel Management Plan for the Steese Subunit is being completed. New NEPA analysis and an ANILCA Section 810(a) evaluation and finding will be conducted for the Travel Management Plan.

4.5.4.4.7. Cumulative Effects

Past, present and reasonably foreseeable actions on all lands in the subunit are considered with those proposed in the RMP for cumulative effects analysis.

Use of the Steese Subunit has increased substantially since the Steese National Conservation Area was designated in 1980. Decisions on travel management would influence the cumulative case in terms of this use. An estimated 300 miles of user pioneered OHV routes have been created since the signing of the Steese National Conservation Area ROD in 1986 (section 4.5.2.2.5 Recreation, Alternative E). Demand by all users for resources important for subsistence would be anticipated to continue to increasing over the life of the plan as population of the state increases and as technological advancements in motorized equipment continue to occur. Major concerns about impacts to subsistence resources, such as avoidance of OHV by wildlife and effective loss of habitat are discussed in section 4.3.1.12 Effects from Travel Management (page 611–614).

Management of user conflicts relative to subsistence uses would be outside of the RMP process. Maintaining a priority for subsistence uses under ANILCA Title VIII would be through the federal subsistence processes and the Federal Subsistence Board in such cases.

Development off BLM-managed lands, such as mines on state lands within the Fortymile caribou herd calving/postcalving area and migration corridors, would impact subsistence opportunity in the Steese Subunit if caribou population abundance, availability or movements would be altered as a result of this and similar activities.

The cumulative case when considered with decisions on resource extraction in Alternative D could result in a reasonably foreseeable and significant restriction to subsistence uses within the subunit if significant development activity occurs within migration, calving or other important habitats of wildlife. Further analysis is in Appendix J, *ANILCA Section 810 Analysis* section J.2.2.5 Steese Cumulative Case.

4.6. Impacts Specific to the Upper Black River Subunit

4.6.1. Resources

4.6.1.1. Cultural and Paleontological Resources Upper Black River Subunit

Summary of Effects

See section 4.3.1.3 Effects Common to All Alternatives, Impacts Common to All Subunits.

4.6.1.1.1. Effects Common to All Alternatives

In addition to those resources, resources uses, and programs listed as having no potential effects to cultural and paleontological resources in section 4.3.1.3, the following programs would also have no effects under all alternatives in the Upper Black River Subunit: Locatable Minerals and Recreation.

In terms of locatable minerals, all lands are presently withdrawn, and there are no existing mining claims. As a result, there are presently no effects to cultural and paleontological resources. In Alternative B, the entire subunit, or 2,360,000 acres, would remain closed. In Alternative C and Alternative D, the entire 2,360,000 acres in the subunit would be opened to mineral entry. In Alternative E, 1,813,000 acres would be closed, and all other areas (547,000 acres) would be open. Typically, locatable mineral mining would have the potential to directly and adversely impact cultural and paleontological resources through not only the mining itself and the construction of new access roads, but also indirectly by opening up new, previously isolated areas to other public land users. However, assumptions for locatable minerals for all alternatives in the subunit indicate that no mining activity would occur during the life of the plan. This equates to no acres of disturbed ground and no new access roads. In sum, locatable mineral mining would not impact cultural and paleontological resources in the Upper Black River Subunit over the life of the plan.

The subunit is extremely remote, and ongoing recreational uses of BLM-managed lands consist primarily of subsistence or casual recreational use. There are no plans to change this present situation in any of the alternatives. Therefore, there would be no potential impacts to cultural and paleontological resources from the recreation program in this subunit.

4.6.1.1.2. Alternative A (No Action)

Effects From Travel Management

There are no OHV designations in place and the use of motorized vehicles, mechanized equipment, water craft, and aircraft is unrestricted. With no restrictions on the size, location, and seasonality of equipment used in this subunit, the potential for adversely effecting cultural and paleontological resources exists.

4.6.1.1.3. Alternative B

Effects From Travel Management

Cross-country winter use (October 15 through April 30) of snowmobiles 50 inches or less in width and weighing 1,000 pounds curb weight and less would be allowed throughout the entire subunit. Cross-country summer use (May 1 through October 14) of vehicles 64 inches or less in width and weighing 1,500 pounds curb weight and less would be allowed only outside of the Salmon Fork ACEC (621,000 acres). Within the ACEC, no summer OHV use would be allowed.

With advances in recreational vehicle technology, the Upper Black River Subunit could experience an increased level of land use and activity participation related to OHVs and access for subsistence uses. However, this increase would most likely be limited due to the features of topography, soils, vegetation, permafrost, lack of any defined trails, and overall remoteness of the area. There would likely be less direct adverse effects to cultural and paleontological resources in Alternative B relative to Alternative A. The potential for direct effects to cultural resources exists in Alternative B, as OHV use in the area would likely concentrate on higher, better drained areas. Archaeological surveys throughout the subunit indicate a predominance of prehistoric archaeological sites in just such areas that would be favored by overland OHV users. There would be no likely impact to paleontological resources by this alternative.

4.6.1.1.4. Alternative C

Effects From Travel Management

Summer and winter use of OHVs would be the same as Alternative B except there would be no Salmon Fork ACEC summer restrictions in Alternative C. As a result, while the nature of the impacts to cultural and paleontological resources would be the same as Alternative B, their likelihood of occurring would be greater because there is more land opened up to their use in this Alternative C.

4.6.1.1.5. Alternative D

Effects From Travel Management

Same as Alternative C.

4.6.1.1.6. Alternative E (Proposed RMP)

Effects from Travel Management

Same as Alternative C.

4.6.1.2. Fish and Aquatic Species Upper Black River Subunit

Summary of Effects

Fish and aquatic species would be primarily affected by surface-disturbing activities which alter stream channels, remove or damage riparian vegetation, or result in soil erosion and sedimentation to fish and aquatic habitat. The level of impact would depend on the success and adequacy of protective measures. Few surface-disturbing activities are expected in this subunit under any alternative due to the lack of access and limited mineral potential. However, the Salmon Fork Black River contains very high fishery resources, meets the importance and relevance criteria as an ACEC for fishery values, and is open to locatable minerals under Alternatives C

and D. Designation of the Salmon Fork ACEC under Alternatives B, C, D, and E would provide additional protection of fish habitat.

Table 4.17. Stream Miles and Acres Open to Locatable Mineral Entry by Alternative, Upper Black River Subunit

UPPER BLACK RIVER SUBUNIT (BLM-managed lands)	ALTERNATIVES				
	A	B	C	D	E
Stream miles	4,144	4,144	4,144	4,144	4,144
Stream miles open to locatables (proposed)	0	0	4,144	4,144	916
Stream miles open to locatables (proposed) plus miles within current valid federal claims	0	0	4,144	4,144	916
Stream miles within RCAs in areas open to locatables (proposed)	N/A	0	560 (14%)	360 (9%)	3
Stream miles outside RCAs in areas open to locatables (proposed)	N/A	0	3,500 (86%)	3,800 (91%)	916 (22%)
Acres open to locatables (proposed)	0	0	2.4 million	2.4 million	547,000
Acres open to locatables (proposed) plus miles within current valid federal claims	0	0	2.4 million	2.4 million	547,000
Anticipated stream gravel disturbance by suction dredging during life of plan measured in cubic yards	0	0	0	0	0
Potential impacts to fish and aquatic habitat (1-4, 4= greatest)	1	1	3	4	2

4.6.1.2.1. Alternative A (No Action)

Effects from Leasable Minerals

The entire subunit is currently withdrawn from mineral leasing through PLOs issued under ANCSA 17(d)(1). There are no existing federal mineral leases. Under this alternative, impacts to fisheries and aquatic resources would be non-existent.

Effects from Locatable Minerals

The entire subunit is currently withdrawn from locatable mineral entry through PLOs issued under ANCSA 17(d)(1). There are no existing federal mining claims. Under this alternative, impacts to fisheries and aquatic resources would be non-existent.

Effects from Recreation

There is no existing land use plan for the Upper Black River Subunit. The subunit does not have a recreational management area designation, which includes managing in a custodial manner and providing for visitor health and safety, reducing user conflicts, visitor satisfaction, and preventing resource damage. There are no OHV designations in place and the use of motorized vehicles and mechanized equipment, motorized water craft, and aircraft is unrestricted. The subunit is extremely remote and ongoing uses of BLM-managed lands consist primarily of subsistence or casual recreational use. There are no known impacts to fish and aquatic habitat from recreation in this subunit. Given the remote location and low number of people living in or adjacent to

this subunit the impacts would likely be minor or nonexistent. Recreation will be managed the same for Alternatives A, B, C, D, and E and therefore the potential impacts to fish and aquatic habitat for all Alternatives would be the same.

Effects from Travel Management

There are no OHV designations in place and the use of motorized vehicles and mechanized equipment, motorized water craft, and aircraft is unrestricted. Impacts from OHVs would likely be minimal given the remote location, limited use, and limited number of “summer trails” within the subunit. Most travel within the subunit is by boat, snowmobile, or aircraft, which generally has little impact on fish and aquatic habitat.

4.6.1.2.2. Alternative B

Effects from Leasable Minerals

The effects would be the same as in Alternative A

Effects from Locatable Minerals

The effects would be the same as in Alternative A.

Effects from Recreation

The effects would be the same as in Alternative A.

Effects from Travel Management

This alternative allows cross-country use of OHVs weighing 1,500 pounds curb weight year round, except in the Salmon Fork ACEC. Impacts from OHVs would likely be minimal given the remote location and limited use and limited number of “summer trails” within the subunit. Most travel within the subunit is by boat, snowmobile, or aircraft which generally has little impact on fish and aquatic habitat. Alternative B would provide more protection to fish and aquatic habitat than Alternatives A, C, D, or E.

Effects from Special Designations

Under Alternative B, 621,000 acres within the Salmon Fork watershed would be designated as the Salmon Fork ACEC. The Salmon Fork Black River contains high-value fishery resources and is the main reason for the ACEC designation. The ACEC would remain closed to locatable minerals, leasable minerals, and salable minerals. Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact.

The Salmon Fork Black River (52 miles) would be recommended as suitable for designation in the National Wild and Scenic Rivers System. The river corridor would be closed to mineral leasing and location. Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact. Alternative B would provide the greatest protection to fish and aquatic habitat, as compared to Alternatives A, C, D, and E.

4.6.1.2.3. Alternative C

Effects from Leasable Minerals

The Salmon Fork Black River ACEC (621,000 acres) would be closed to oil and gas leasing while the remainder of the subunit would be open. Leasing would not occur without further NEPA analysis. Interest from industry is expected to be limited due to the lack of BLM-managed lands in high potential areas. Seismic exploration would be allowed during winter months after the tundra is frozen. If seismic exploration does occur, it would likely occur in high potential areas, but is unlikely during the life of the plan. Given those assumptions, impacts to fisheries and aquatic habitat would be minor to non-existent.

Potential threats to overwintering fish from seismic surveys in the planning area would primarily stem from: 1) stress associated with acoustic energy pulses transmitted into the ground directly over overwintering pools, and 2) physical damage to overwintering habitat caused by seismic vehicles. Large overwintering pools might allow fish to flee the immediate area of intense stress where fish occupying small pools might not have that option. Depending on proximity, adult fish could suffer no more than temporary discomfort where intense acoustical pulses could be lethal to juveniles. Given that overwintering habitat represents a small percentage of the planning area, it is unlikely that seismic transmissions would occur directly over overwintering sites with any degree of regularity. Furthermore, seismic crews could avoid known overwintering areas. Overall, any affects to overwintering fish caused by winter seismic surveys would be localized and would likely to have little effect on fish populations within the planning area.

Effects from Locatable Minerals

Alternative C is substantially different from Alternatives A and B because in Alternative C the entire subunit (2.4 million acres) and 4,144 miles of stream would be open to locatable mineral entry. This includes 560 miles of stream (fourteen percent) within RCAs on the Salmon Fork Black and Kandik Rivers and over 1,000 miles within the Salmon Fork Black River ACEC. Protection of fish and aquatic habitat in eighty-six percent of the stream miles would rely on the current regulations, reclamation requirements and SOPs outlined in this plan, and mitigation measures developed during project-specific NEPA analysis. Mineral potential within the subunit is considered low with no foreseeable development for locatable minerals.

The proposed Salmon Fork Black River ACEC was nominated by the public for various resource values including fisheries. BLM evaluated the ACEC for fishery values and determined it met both the relevance and importance criteria. The maintenance of these high-value fishery resources would rely upon the higher level of reclamation previously described (Chapter 2, Fish and Aquatic Species) for RCAs and ACECs. As previously mentioned, placer mining has resulted in unavoidable short- and long-term adverse impacts to fish and aquatic resources in the past and therefore would likely have similar results within the proposed ACEC.

If development did occur, based on the amount of stream miles and acres open to potential disturbance, impacts to fish and aquatic resources may be considered moderate and short-term (5 to 10 years) within the RCAs and ACEC and moderate and long-term (10 to 20 years) outside of RCAs and the ACEC. Potential impacts may result in decreased levels of fish populations and habitat at the local level. Alternative C would provide less protection to fish and aquatic habitat than Alternatives A, B, and E, but more protection than Alternative D.

Effects from Recreation

The effects would be the same as in Alternative A.

Effects from Travel Management

This alternative allows the cross-country use of OHVs weighing 1,500 pounds curb weight and less year round within the entire subunit, including the Salmon Fork ACEC. Impacts from OHVs would likely be minimal given the remote location, limited use, and limited number of “summer trails” within the subunit. The Salmon Fork ACEC designation is largely due to the high-value fishery resources found there. Although the area is very remote and OHV use is expected to be minimal, cross-country travel could result in localized, adverse impacts to this high-value fishery. Alternative C would provide more protection to fish and aquatic habitat than Alternative A and D, but less than Alternative B and E.

Effects from Special Designations

Alternative C would designate 621,000 acres as the Salmon Fork ACEC. In this Alternative, the ACEC would be open to locatables. The travel management and minerals decisions in the ACEC are also less restrictive than in Alternative B and E providing less protection to fish and aquatic habitat. Fish and aquatic habitat benefit from this alternative, but to a much lesser degree than in Alternative A, B, or E because of the increased potential for surface disturbing activities within or adjacent to streams.

4.6.1.2.4. Alternative D

Effects from Fluid Leasable Minerals

Impacts to fish and aquatic habitat would be similar to those in Alternative C, but Alternative D would have fewer acres subject to minor constraints. Alternative D would have the greatest potential impacts to fish and aquatic resources.

Effects from Locatable Minerals

The effects are the same as Alternative C, with the exception that Alternative D has 200 fewer stream miles within RCAs. This is simply because there are fewer RCAs in Alternative D, the number of stream miles open to locatables are the same as Alternative C.

Impacts to fish and aquatic habitat would be the greatest in Alternative D, because there are 200 more miles of stream (fish and aquatic habitat) that would not benefit from the higher reclamation standards required in RCAs and ACECs.

Effects from Recreation

The effects are the same as Alternative A.

Effects from Travel Management

The effects are the same as Alternative C.

Effects from Special Designations

The minerals decisions in the Salmon Fork ACEC (621,000 acres) are even less restrictive than in Alternative C, providing less protection to fish and aquatic habitat. In this alternative the ACEC would be open to salable minerals and mineral leasing subject to minor constraints. High-value fish and aquatic habitats within the proposed ACEC would rely on the higher reclamation standards for ACECs. Alternative D has the greatest potential to adversely effect Fish and aquatic habitat when compared to all other Alternatives.

4.6.1.2.5. Alternative E (Proposed RMP)

Effects from Fluid Leasable Minerals

Impacts to fish and aquatic habitat would be similar to, but less than those discussed in Alternative C. All RCAs would be closed to oil and gas leasing. Only 547,000 acres outside of RCAs would be open. Alternative E would have fewer potential impacts than Alternative D and C, but more than Alternative A and B. Impacts to fish and aquatic resources are anticipated to be minimal and localized under this alternative.

Effects from Locatable Minerals

This alternative is substantially different than Alternatives C and D in that the amount of acres recommended open to locatable minerals would only be 547,000 acres, compared to 2.3 million acres in Alternatives C and D. Watersheds with high value fish and aquatic resources would likely remain in their natural condition during the life of the plan. If mining did occur in areas open to locatable minerals and adjacent to waterbodies, the impacts to fish and aquatic resources would likely be moderate and long term (10–20 years). This alternative provides substantially more protection to the high value fish and aquatic resources in the Black River drainage than Alternatives C and D.

Effects from Recreation

The effects would be the same as in Alternative A.

Effects from Travel Management

The effects are the same as Alternative C.

Effects from Special Designations

The Salmon Fork ACEC would contain 623,000 acres and it would be closed to locatable mineral entry and mineral leasing. OHV use within the ACEC may be limited (such as seasonal restrictions) if that type of use results in adverse impacts to the high value resources for which the area was designated. Alternative E provides more protection than Alternative C and D because the ACEC would be closed to mining. Impacts to fish and aquatic resources would be similar to Alternatives A and B because the area would be closed to mining.

4.6.1.3. Invasive Species Upper Black River Subunit

Summary of Effects

The Upper Black River Subunit is extremely remote. Current uses of BLM lands consist primarily of subsistence and casual recreation use. Impacts and prevention of non-native invasive species (invasive species) being introduced and spread in the planning area were discussed in section 4.3.1.5 of this chapter and measures include outreach and education of applicants and recreational and other users. EDRR and inventory and monitoring will further halt the introduction and spread of invasive species.

Prevention of the introduction of invasive plants is the focus of invasive species management in the Upper Black River Subunit. Natural and human caused disturbances create favorable conditions for non-native invasive plants (invasive plants) to become established when seed is

introduced. Invasive plants can thrive in marginal habitats, such as compacted and dry soils or where canopy cover has been removed. Potential impacts to invasive species management in the Upper Black River Subunit are expected to be minimal because the area is remote and few activities conducive to introduction and spread of invasive species are expected to occur over the life of the plan.

4.6.1.3.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Although management decisions for harvest of timber and forest products varies slightly by alternative in the Upper Black River Subunit, impacts to invasive species management are expected to be minimal under all alternatives. Personal use of timber or forest products would most likely be from residents of the subunit, which reduces the potential for invasive species to be introduced. Some alternatives would close portions of the subunit to commercial timber sales, which would further protect subsistence resources and uses.

Demand for commercial forest products and timber would be expected to be minimal because of the remoteness of the area and lack of access to markets. Interest in biomass harvest by local residents, primarily the Chalkyitsik area, may shift the economics of timber harvest and over the life of the plan result in permitted uses. Impacts to invasive species management from this level of harvest would be low and mitigated through permit stipulations, including EDRR.

Effects from Lands and Realty

Most lands and realty actions result in ground disturbance, which increases the potential for invasive plants to become established. Vehicles and equipment used for construction and maintenance in rights-of-way or site development can import invasive species, including seeds and all developmental stages of invertebrate pests, to the disturbed area. The potential for introduction and spread of invasive species from these actions, if they occurred, would be expected to be significant. Impacts would be mitigated to the extent possible through permit stipulations and education and outreach efforts directed at applicants. However, there are no roads on lands managed by BLM and few applications for land use authorizations are anticipated under any alternative. Very little likelihood of invasive species becoming established from Lands and Realty actions would occur. Impacts to invasive species management would be low and mitigated through permit stipulations, including EDRR responsibilities by permittees.

Effects from Salable Minerals

The primary impacts from salable minerals are introduction of plants from contaminated equipment or movement of seeds in contaminated gravel. Although management decisions for salable minerals vary slightly by alternative, impacts to invasive plants management are expected to be minimal under all alternatives. Alternative B would close the Salmon Fork ACEC to salable minerals. This closure would have no effect because no demand for salable minerals is anticipated over the life of the plan, regardless of alternative. In the highly unlikely event that an application for a mineral sale was received and approved, stipulations attached to the permit would include reclamation and other best management practices to minimize impacts from invasive plants. Monitoring and EDRR efforts would be costly but would further reduce the potential for invasive plants to become established. As discussed in section 4.3.1.5 Impacts Common to All Subunits, a weed-free gravel certification program is being developed in Alaska, further reducing the risks of introduction of non-native invasive plants from salable minerals.

Effects from Recreation

Recreation on BLM lands in the subunit would be managed as not designated under all alternatives. Recreation within an area without a special designation for recreation is managed as generally unstructured, with no identifiable market demand for development of infrastructure. Recreation use in the area is considered casual and expected to remain so over the life of the plan. Recreation management on all BLM lands promotes “Leave No Trace” and “Tread Lightly” use practices, which enhance the prevention of invasive species introduction from recreational activities. No impacts to invasive species management would be expected from recreational use in the area.

Effects from Travel Management

General impacts from Travel Management are discussed in section 4.3.1.5.1. Alternatives for travel management include a range of limits on OHV weight restrictions and cross-country summer use. Permits would be required for any OHV over 1,500 pounds curb weight. Limitations on OHV use would help prevent the introduction of invasive species and aid EDRR efforts by concentrating use and reducing disturbance to native vegetation. Permitting use would provide opportunities to educated users on the threats to habitats from invasive species and prevention measures they can take (use and site-specific mitigation).

Use of motorized boats would be unrestricted. Boats and other watercraft may harbor invasive species that may be dislodged and spread to new areas. EDRR, outreach and education would help prevent the introduction of invasive species from motorized boats.

Aircraft use would be unrestricted with provisions to minimize clearing for landing areas. Formal improvements of airstrips would be by permit only. Invasive species, particularly plant seeds and aquatic invertebrates, could be transported by aircraft from infestations at urban airstrips or float ponds and introduced in remote areas, such as on gravel bars, benches and ponds. Outreach and education targeting recreational users, including pilots, would help reduce introduction of invasive species. Some use of aircraft would be expected, mostly during state hunting and fishing seasons.

OHV and most other travel would be expected to be local and mostly related to subsistence use activities.

4.6.1.3.2. Alternative A (No Action)

Under the No Action Alternative, present land management practices and levels of resource used would continue in accordance with existing laws, regulations, and policy. Land use activities would continue to be analyzed through the NEPA process. Through these processes, appropriate stipulations would be developed to mitigate any impacts to invasive species that would be identified.

OHV use is unrestricted in the subunit. No recreation management, RNA, ACEC, or WSR designations exist. The subunit is extremely remote and few to no land use activities occur that create disturbance to vegetative communities.

Effects from Lands and Realty

There would be no effects to invasive species management from changes in land tenure, as no lands are identified for disposal or acquisition.

Most lands and realty actions result in ground disturbance, which increases the potential for invasive plants to become established. Vehicles and equipment used for construction and maintenance in rights-of-way or site development can import invasive species to the disturbed area. The potential for introduction and spread of invasive species from these actions, if they occurred, would be expected to be significant. Impacts would be mitigated to the extent possible through permit stipulations and education and outreach efforts directed at applicants. Under Alternative A, land use authorizations would be considered throughout the subunit. Few requests for land use authorizations would be anticipated, since no right-of-way permits have been requested in the past and the area would remain withdrawn to leasable and locatable minerals.

Effects from Leasable and Locatable Minerals

The entire subunit is withdrawn from mineral entry and leasing. There are no existing mining claims or leases, thus there would be no impacts from leasable or locatable minerals.

4.6.1.3.3. Alternative B

Effects from Lands and Realty

Under Alternative B, private inholdings in the Salmon Fork ACEC could be acquired from willing sellers. Parcels intermingled with Native village lands around Circle would be considered for acquisition or disposal, including exchange. Consolidation of scattered parcels would simplify management of invasive species. No adverse impacts would be expected from these actions.

The Salmon Fork ACEC would be a right-of-way avoidance area. This would reduce or eliminate ground disturbance and fragmentation of habitat from construction and maintenance activities. Requests for rights-of-way would be considered at the project level, allowing for mitigation of impacts to invasive species management. Monitoring for invasive plants, which would be of most concern for realty actions, and EDRR efforts may also be employed to mitigate impacts. However, few requests for rights-of-way would be expected due to the remoteness of the ACEC and the lack of roads in the subunit. Little or no adverse impacts would be anticipated from these decisions.

Effects from Leasable and Locatable Minerals

Same as Alternative A.

4.6.1.3.4. Alternative C

Effects from Lands and Realty

Effects from land tenure decisions would be the same as Alternative B.

No right-of-way avoidance areas would be designated under Alternative C, resulting in a slightly higher potential for impacts than in Alternative B. Requests for rights-of-way would be considered at the project level, allowing for mitigation of impacts to invasive plants in particular. Few requests for ROW authorizations would be expected. Little or no adverse impacts to invasive plants from these decisions are anticipated. Monitoring for invasive plants and EDRR efforts may be employed to mitigate impacts. Effects from land use authorizations would be similar to Alternative A.

Effects from Leasable and Locatable Minerals

All lands managed by BLM in the Upper Black River subunit would be open to locatable minerals under Alternative C, including the 621,000 acres of the Salmon Fork ACEC. Mining operations would be analyzed on a project-specific basis. Notices and Plans of Operation would require a reclamation plan that would attain the performance standards required by the BLM mining regulations (42 CFR 3809) and guidance in the BLM Surface Management Handbook (H-3809-1). Requirements would include rehabilitation of fish and wildlife habitat. BLM Alaska policy (IM-BLM-AK-2015-004) would require reclamation of streams to level three functionality. Permit and Notice stipulations would include other reclamation standards and other best management practices to minimize impacts from invasive species. Any operation with disturbance under 4.4 acres would be a Notice level operation unless they occur in the ACEC, in which case a Plan of Operations would be required under 43 CFR 3809.10. Monitoring and EDRR efforts could be costly, but would further reduce the potential for invasive plants to become established. The locatable mineral potential in the subunit is low and few locatable mineral exploration or development would be anticipated.

Suction dredging could occur with a notice level operation however the reasonably foreseeable development scenario prediction is that no suction dredge operations or casual-use level suction dredging will occur in the Upper Black River planning unit.

The ACEC would be closed to leasable minerals, consistent with maintaining wilderness characteristics. The remaining 1,739,000 acres would be open. No lease sales are anticipated in the remaining area. In the unlikely event that an area was nominated for a lease sale, the effects would be analyzed under a new NEPA document. Seismic exploration could occur on high potential oil and gas lands near Circle (Map 87). Geophysical exploration would require removal of trees in 14 foot wide straight line transects for 10–20 miles. Exploration will be limited to winter with requirements on snow and ground frost depths, which will protect vegetation. Compaction of vegetation and soils and removal of canopy cover to conduct exploration may result in conditions favorable to invasive plants becoming established if seed is introduced. Invasive plants are more likely to be introduced in the Circle area than other parts of the subunit because these lands are less remote and have high potential for oil and gas. Impacts to invasive species management would be minimal and to the extent possible mitigated through the permitting process.

4.6.1.3.5. Alternative D

Effects from Lands and Realty

Effects from land tenure decisions would be the same as Alternative B. Effects from land use authorizations would be the same as Alternative C.

Effects from Leasable and Locatable Minerals

All BLM lands would be open to leasable minerals under Alternative D, some subject to minor constraints. Although this alternative opens the Salmon Fork ACEC to leasable minerals, due to the low oil and gas potential, lack of access, and remoteness of the area no exploration or development is anticipated. Impacts would essentially be the same as Alternative C.

All BLM lands would be open to locatable minerals under Alternative D. Impacts would essentially be the same as Alternative C.

4.6.1.3.6. Alternative E (Proposed RMP)

Alternative E differs from Alternative C in that the Salmon Fork ACEC would be larger (623,000 acres), 28 watersheds would be managed as Riparian Conservation Areas (RCAs), and the ACEC, RCAs, and Black River watershed would be recommended closed to locatable and leasable minerals (1,813,000 acres).

Impacts from Locatable and Leasable Minerals

The recommended closure of 1,813,000 acres to locatable and leasable minerals would reduce the risk of introduction of nonnative invasive species in the subunit. The primary activities in the subunit would be subsistence and recreational activities, which would occur mostly by motorized boat.

Impacts from other resource and resource use decisions in Alternative E would be the same as Alternative C and common to all.

4.6.1.3.7. Cumulative Effects

The effects of past, present and reasonably foreseeable future actions in the Upper Black River Subunit are not likely to cumulatively impact invasive species introduction and spread in the subunit. The remoteness of the area, lack of overland access, and costs of developing resources, other than those that would be used by local residents in or adjacent to the subunit, would render it unlikely that locatable, leasable, or salable mineral or commercial forest sales would occur. Rights-of-way development would be driven by resource development. No proposed exploration, development, access, or other rights-of-way actions are currently under consideration on BLM lands in the subunit. No new proposals would be expected, with the possible exception seismic exploration for oil and gas.

With increased pressures from growing populations and advances in recreational vehicle technology, the Upper Black River Subunit could experience growth in recreation related land use and activity. If this occurs, the need for additional trails and mechanisms for managing these trails could become necessary. However, growth of OHV use would be limited as the subunit is inaccessible from existing roads and highways, is located north and east of the Yukon River, consists of terrain that is generally not suitable for summer OHV use, and is bordered by National Park Service lands on the south and National Wildlife Refuge lands on the west and north. The Yukon River is a barrier to summer access by OHV and use of OHV on Yukon-Charley Rivers National Preserve and Yukon Flats NWR is limited.

4.6.1.4. Soil and Water Resources Upper Black River Subunit

Summary of Effects

The Upper Black River subunit is generally very remote and infrequently visited. Due to its remoteness (high transportation cost) and low mineral potential, little resource development or motorized vehicle use is predicted. As a result, few broad-scale impacts are anticipated in any alternative during the life of the plan. Nonetheless, mining claims carry development rights which could have unpredictable long-term effects on soil and water resources. In Alternative E, the Salmon Fork ACEC and 28 RCAs will remain closed to locatable and leasable mineral

development (nearly half of the subunit). This will prevent potential impacts to soil and water resources in these areas. Approximately 547,000 acres would be open to locatable mineral entry.

4.6.1.4.1. Alternative A (No Action)

Effects from Locatable Minerals

The Upper Black Subunit is closed to locatable mineral entry and there are no existing federal mining claims. There would be no effects from locatable minerals.

Effects from Recreation

There are no Recreation Management designations for the Black River Subunit. The subunit is extremely remote and ongoing uses of BLM lands consist primarily of subsistence or casual recreational use. Past impacts to soil and water resources have been low and future impacts are expected to be minimal under Alternative A.

Effects from Travel Management

There are no OHV area designations in place and the use of motorized vehicles, mechanized equipment, water craft, and aircraft is unrestricted. Alternative A could result in future detrimental impacts to soil resources and watersheds from proliferation of user-created trails, subsequent soil erosion, and increased siltation in streams. However, because of the remote location and lack of access, impacts to soils and water resources are expected to be minimal.

4.6.1.4.2. Alternative B

Effects from Locatable Minerals

Same as Alternative A.

Effects from Recreation

There are no designated recreation management zones or areas for the Black River subunit.

Effects from Travel Management

Seasonal travel restrictions and OHV weight restrictions would reduce the amount of surface disturbance to soil and water resources.

4.6.1.4.3. Alternative C

Effects from Locatable Minerals

The Salmon Fork ACEC (621,000 acres) would be open to locatable mineral entry and the remainder of the subunit, 1,740,000 acres would be open to mineral entry. However no mining is anticipated during the life of the plan due to the low mineral potential and lack of access.

Potential impacts to soil and water resources from locatable minerals management would be greater under Alternative C than Alternatives A and B because new areas would be opened to mineral entry and development. Placer mine operations have the potential to adversely impact soil resources and water quality through erosion, unintended discharge of settling ponds,

and subsequent increased downstream turbidity. Depending on the methods used and size of operation, mining operations could impact the natural water quality and flow characteristics of selected river segments. Disturbance to soil and water resources from a particular mining operation would be mitigated through SOPs and the NEPA process.

Effects from Recreation

Same as Alternative B.

Effects from Travel Management

Same as Alternative B.

4.6.1.4.4. Alternative D

Effects from Locatable Minerals

Under Alternative D, the entire Upper Black River Subunit (2,361,000 acres) would be open to locatable mineral entry. The potential for adverse impacts to soil and water resources would be greater than under Alternatives A, B, but the same as Alternative C and more than Alternative E. However, little if any, locatable mineral activity is anticipated due to the lack of access and the low mineral potential. Disturbance to soil and water resources from a particular mining operation would be mitigated through SOPs and the NEPA process.

Effects from Recreation

Same as Alternative B.

Effects from Travel Management

Same as Alternative B.

4.6.1.4.5. Alternative E (Proposed RMP)

Alternative E is intended to provide a mix of land management actions that best satisfies issues and concerns in consideration of all values and programs and adopts a blend of actions that would balance moderate development with protection of the environment.

Effects from Locatable Minerals

Under Alternative E approximately 547,000 acres, encompassing about 916 stream miles, would be open to locatable mineral entry and associated surface-disturbing activities. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. It is anticipated that little if any mining or exploration will take place during the life of this plan due to lack of access and low mineral values. However, the area has also had little exploration activity and potential may be underestimated.

Alternative E differs from Alternatives C and D in that the proposed Salmon Fork ACEC, RCAs, and the Black River watershed would be closed to mineral entry and the amount of acres open would be only 547,000 acres compared to 2.3 million acres in Alternatives C and D. Soil and water resources within the ACEC, RCAs, and Black River watershed would remain in natural condition during the life of the plan

Effects from Recreation and Travel Management

There are no designated recreation management zones or areas for the Black River subunit. Under Alternative E all OHVs would be limited to 1,000 pounds curb weight and summer OHV use would not be allowed within the Salmon Fork ACEC. Little recreational and vehicular use is expected hence impacts to soil and water resources are anticipated to be very low. New restrictions can be developed if resource impacts grow due to changing environmental conditions. The subunit is most accessible in winter by snowmobiles, with the much of the accessible lands occurring east of Circle. Impacts on soil and water resources from a small number of federally qualified subsistence users, winter trappers, and occasional summer recreationists are negligible.

With advances in recreational vehicle technology, the Upper Black River Subunit could experience an increased level of land use and activity participation related to OHVs and access for subsistence uses. However, this increase would most likely be limited due to the features of topography, soils, vegetation, permafrost, lack of any defined trails, and overall remoteness of the area.

4.6.1.5. Visual Resources Upper Black River Subunit

Summary of Effects

VRM Classes outline the level of change that could occur within that class. Identifying an area as a specific management class does not guarantee that change will take place. The discussion below identifies the number of acres that may retain or lose visual quality due to management in a specific VRM Class; however, the potential for every acre to lose visual quality due to management in a specific VRM Class is extremely low. The analysis logically assumes that areas designated as VRM Class III and IV would permit more surface-disturbing impacts and potentially have greater adverse impacts on visual resources and scenic quality than those areas designated as VRM Class I and II.

In addition to those impacts discussed as common to all subunits under section 4.3.1.9, the following impacts may occur in the Upper Black River Subunit. For the visual resource inventory see Appendix D, *Visual Resource Inventory*.

Alternatives — VRM Management Class Designations		VISUAL RESOURCES INVENTORY CLASS DESIGNATION							
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV	
		0	0%	1,477,000	63%	447,000	19%	435,000	18%
Alternative A	Acres	There is no current land use plan, thus VRM Classes have not been assigned to any lands under Alternative A.							
Alternative B	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I									
VRM II	2,361,000			1,478,000	63	448,000	19	435,000	18
VRM III									
VRM IV									
Total	2,361,000			1,478,000	63	448,000	19	435,000	18
Alternative C	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I									
VRM II	623,000			549,000	23	51,000	2	23,000	1
VRM III									
VRM IV	1,738,000			929,000	39	397,000	17	413,000	17
Total	2,361,000			1,478,000	63	448,000	19	435,000	18
Alternative D	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I									

Alternatives — VRM Management Class Designations		VISUAL RESOURCES INVENTORY CLASS DESIGNATION							
		VRI Class I		VRI Class II		VRI Class III		VRI Class IV	
		0	0%	1,477,000	63%	447,000	19%	435,000	18%
VRM II									
VRM III									
VRM IV	2,361,000			1,478,000	63	448,000	19	435,000	18
Total	2,361,000			1,478,000	63	448,000	19	435,000	18
Alternative E	Acres	Acres	%	Acres	%	Acres	%	Acres	%
VRM I									
VRM II				803,000	34	236,000	10	92,000	4
VRM III									
VRM IV				674,000	29	212,000	9	343,000	15
Total	2,360,000			1,477,000	63	448,000	19	435,000	18

4.6.1.5.1. Effects Common to All Alternatives

Effects from Cave and Karst Resources

Management of significant caves according to federal laws and regulations, and to prevent resource damage would will help maintain visual resources at the current level of development under all alternatives.

Effects from Salable Minerals

The impacts from the extraction of salable minerals would vary depending on the methods used, the size of operation and the number of mines. Although the acreage open to salable minerals would vary from 1,740,000 acres to 2,161,000 acres depending on the alternative, mineral material sales are not anticipated in the Black River Subunit during the life of the plan due to its remoteness and lack of roads. Thus no impacts are anticipated under any alternative.

4.6.1.5.2. Alternative A (No Action)

Under Alternative A, visual resources would be managed on a project-specific basis as no visual resource management classes have been established. Visual resources would be protected through the use of management class inventory objectives and the visual contrast rating process.

Effects from Visual Resources

This subunit has never been covered by a land use plan. No VRM Classes have ever been assigned, thus the entire subunit would remain unclassified.

Effects from Forest and Woodland Products

Under Alternative A, permits for all types of forest product or timber harvest would be considered throughout the subunit (2,361,000 acres). The size and scope of impacts would depend on the size of the area and harvest techniques used. Given the remote nature, lack of access, and lack of commercially valuable timber, few if any, requests for commercial use of forest products or timber are anticipated. No permits have been issued for this area in the past. The types of impacts that could occur if harvest were permitted, are discussed in section 4.3.1.9 Impacts Common to All Subunits.

Effects from Lands and Realty

Under Alternative A, permits for land use authorizations would be considered throughout the subunit. The size and scope of impacts would depend on the type of authorization. Given the remote nature and lack of access to the subunit, few if any, requests for land use authorizations are anticipated during the life of the plan. The types of impacts that could occur if such uses are permitted, are discussed in section 4.3.1.9 Impacts Common to All Subunits.

Effects from Leasable and Locatable Minerals

The entire subunit (2,361,000 acres) is closed to locatable mineral entry and mineral leasing, subject to valid existing rights. There are no existing mining claims. Under Alternative A, the subunit would remain closed, protecting visual resources by limiting surface disturbance activities associated with mining.

Effects from Travel Management

There are no OHV designations in place and OHV use is unrestricted on 2,361,000 acres. Impacts to visual resources from various types of travel are described in section 4.3.1.9 Impacts Common to All Subunits. The level of impact would be dependent on the types and levels of use. Given the lack of roads and trails in the subunit, current OHV use is likely very limited, consisting of primarily aircraft, boats, and snowmobiles.

4.6.1.5.3. Alternative B

In general, Alternative B anticipates the lowest level of resource development and adopts VRM classes that would be the most restrictive to development. Additional impacts beyond those discussed as common to all subunits under section 4.3.1.9 are discussed below.

Effects from Fish and Aquatic Species

There are 28 Riparian Conservation Areas (RCAs) identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 624,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

No lands were identified as VRI Class I lands. Of VRI Class II lands within RCAs, one-hundred percent or 351,000 acres would be managed as Class II. Of VRI Class III lands within RCAs (212,000 acres) one-hundred percent would be managed as Class II lands resulting in preservation of the existing visual character of these lands. Of VRI Class IV lands within RCAs one-hundred percent (61,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Visual Resources

No lands were inventoried as VRI Class I acres under any alternative. Under Alternative B, of VRI Class II lands (sixty-three percent), one-hundred percent (1,478,000 acres) would be managed as VRM Class II allowing a low level of change. These lands have either a B or C rating for scenic quality, a medium sensitivity and occur in all three distance zones.

Of VRI Class III lands (nineteen percent), one-hundred percent (448,000 acres) would be managed as VRM Class II allowing a low level of change to the landscape. These lands have a B or C rating for scenic quality, a medium sensitivity and occur in all three distance zones.

Of VRI Class IV lands (eighteen percent), one-hundred percent (435,000 acres) will be managed as VRM Class II lands allowing a low level of change to the landscape. These lands have a B or C rating for scenic quality, have medium sensitivity and occur in all three distance zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative B, wilderness characteristics would be maintained on one-hundred percent of the lands with wilderness characteristics (2,357,000 acres) limiting activities that impact the appearance of naturalness.

No lands with wilderness characteristics were identified as VRI Class I lands. Of VRI Class II lands with wilderness characteristics, one-hundred percent or 1,478,000 acres would be managed as Class II. Of VRI Class III lands with wilderness characteristics (448,000 acres) one-hundred percent would be managed as Class II resulting in preservation of the existing visual character of these lands. Of VRI Class IV lands with wilderness characteristics one-hundred percent (431,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Forest and Woodland Products

Under Alternative B, personal use of timber and commercial use of forest products would be considered throughout the subunit (2,361,000 acres). The size and scope of impacts would depend on the size of the area and harvest techniques used.

No commercial or salvage timber sales would be allowed. Temporary camps and various impacts from different harvest techniques would not impact 2,361,000 acres. These closures would help protect visual resources. However, given the lack of access and low timber values in the subunit, few if any, commercial sales are anticipated.

Effects from Lands and Realty

Under Alternative B, the entire subunit, is identified for retention by the BLM; private inholdings would be considered for acquisition to consolidate land ownership patterns. These decisions would help protect visual resources on these lands.

Within the Salmon Fork ACEC, rights-of-way (ROW) would generally not occur if other suitable locations are available. This would protect visual resources by not allowing clearance of vegetation and construction of structures associated with different kinds of ROW. A natural landscape in line, form, color and texture would be maintained on 621,000 acres. Given the remote location of the subunit, few if any, ROW are anticipated. Other types of land use authorizations would be considered throughout the subunit and impacts would be the same as Alternative A.

Effects from Leasable and Locatable Minerals

Same as Alternative A, the subunit would be closed to these types of uses, protecting visual resources by limiting surface-disturbing activities.

Effects from Travel Management

The restriction of motorized use to OHVs 50 inches or less in width and weighing 1,000 pounds curb weight and less without permit for winter travel, and 64 inches or less and 1,500 pounds curb weight or less for summer travel within the entire subunit helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape even with cross-country travel allowed. The lighter weight vehicles tend to be smaller and narrower, thus impacting vegetation on a smaller footprint or scale. Weight restricted travel impacts 2,361,000 acres. Impacts to visual resources by open cross-country travel are described under section 4.3.1.9 Impacts Common to All Subunits.

The closure of the Salmon Fork ACEC to summer OHV use will prevent surface disturbance to vegetation and soils from the use of motorized vehicles, thus protecting the visual resources of the natural landscape on 621,000 acres. The use of larger motorized vehicles within the Upper Black River Subunit could be authorized by permit. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. Impacts would be similar to those described for cross-country travel under section 4.3.1.9 Impacts Common to All Subunits except on a larger scale. Although much of the subunit would be open to cross-country motorized use, the lack of trails and remote nature of the subunit would limit the level of use.

Effects from Special Designations

Under Alternative B, 621,000 acres would be designated as the Salmon Fork ACEC to manage limestone habitats and steep south facing slopes and bluffs for rare flora, and to protect Bald Eagle nesting habitat, salmon habitat, and caribou habitat. Management decisions to protect fish and wildlife habitat in the ACEC would help preserve the visual character of the area.

No lands were identified as VRI Class I lands. Of VRI Class II lands in the ACEC, one-hundred percent or 549,000 acres would be managed as Class II. Of VRI Class III lands (51,000 acres) one-hundred percent would be managed as Class II lands resulting in the preservation of the existing visual character of these lands. Of VRI Class IV lands one-hundred percent (20,000 acres) would be managed as Class II lands resulting in the preservation of the existing character of these lands.

Approximately 15,500 acres associated with the Salmon Fork of the Black River would be maintained as a natural landscape under the eligibility as a “wild” river. “Wild” rivers are essentially primitive and undeveloped. Management decisions to preserve these characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform.

4.6.1.5.4. Alternative C

Additional impacts beyond those discussed as common to all subunits in section 4.3.1.9 are discussed below.

Effects from Fish and Aquatic Species

There are 13 RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 205,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

No lands were identified as VRI Class I lands. Of VRI Class II lands within RCAs, forty-nine percent or 100,000 acres would be managed as Class II while fifty-one percent or 105,000 acres would be managed as Class IV lands allowing visual changes to the natural landscape to occur. Of VRI Class III lands within RCAs, ninety-six percent or 37,000 acres would be managed as Class II lands resulting in preservation of the existing visual character of these lands while four percent or 2,000 acres would be managed as Class IV lands allowing visual changes to the natural landscape to occur. Of VRI Class IV lands within RCAs ninety-five percent (1,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands while five percent (48 acres) would be managed as Class IV lands.

Effects from Visual Resources

No lands were identified as VRI Class I lands. Of VRI Class II lands (sixty-three percent), approximately twenty-three percent (549,000) would be managed as VRM Class II allowing a low level of change. Approximately thirty-nine percent (929,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have an A rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Of VRI Class III lands (nineteen percent), two percent (51,000 acres) would be managed as VRM Class II allowing a low level of change, while seventeen percent (397,000) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have a B rating for scenic quality, a medium sensitivity, and occur in the Foreground-Middleground distance zone.

Of VRI Class IV lands (eighteen percent), approximately one percent (23,000 acres) would be managed as VRM Class III potentially resulting in only partial retention of landscape characteristics, while seventeen percent (413,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have either a B or C rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative C, wilderness characteristics would be maintained on twenty-six percent of the lands with wilderness characteristics (621,000 acres) limiting activities that impact the appearance of naturalness.

No lands were identified as VRI Class I lands. Of VRI Class II lands with wilderness characteristics, one-hundred percent or 549,000 acres would be managed as Class II. Of VRI

Class III lands with wilderness characteristics (51,000 acres) one-hundred percent would be managed as Class II resulting in preservation of the existing visual character of these lands. Of VRI Class IV lands with wilderness characteristics one-hundred percent (20,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Forest and Woodland Products

Impacts from personal use of timber and commercial use of forest products would be the same as Alternative B. Additionally, timber salvage sales would be allowed throughout the subunit and commercial timber sales would be allowed except in the Salmon Fork ACEC (621,000 acres). This closures would help protect visual resources. Temporary camps and various impacts from different harvest techniques could impact areas open to harvest. However, few if any, commercial sales are anticipated.

Effects from Land and Realty

Effects from land tenure decisions would be the same as Alternative B. Regarding land use authorizations, the entire subunit (2,361,000 acres) would be available for ROW permits with possible clearance of vegetation and structures associated with different kinds of ROW activities, and result in contrast with the natural landscape in line, form, color and texture as described in section 4.3.1.9.

Effects from Leasable Minerals

Under Alternative C, the seventy-four percent of the subunit would be open to mineral leasing. Minor constraints, such as seasonal restrictions, would apply to 737,000 acres, including lands around Circle, and the Salmon Fork ACEC would be closed (621,000 acres). Minor constraints would protect visual resources by limiting surface-disturbing activities at least seasonally. Impacts to visual resources by exploration, development and production of solid leasable minerals on the remaining 1,625,000 acres would depend on the scale of the activity. Impacts would be unlikely, as no development or exploration of solid leasable minerals is anticipated due to the low potential for these minerals and lack of access.

Seismic exploration could occur on high oil and gas potential lands near Circle. Changes to line, form, color, and texture may occur due to clearing of seismic lines. However, no development of fluid leasable minerals is anticipated during the life of the plan.

Effects from Locatable Minerals

Under Alternative C, the entire subunit would be open to locatable mineral entry and associated surface-disturbing activities. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. It is anticipated that mining will not take place during the life of this plan due to lack of access and low mineral values. Thus impacts are not anticipated.

Effects from Travel Management

Effects from travel management would be the same as Alternative B except in the Salmon Fork ACEC. Under this alternative, the Salmon Fork ACEC would be open to summer motorized use of OHVs 64 inches in width or less and weighing 1,500 pounds curb weight or less. This would result in the potential impacts to visual resources on 2,361,000 acres similar to those described in section 4.3.1.9 Impacts Common to All Subunits.

Effects from Special Designations

Same as Alternative B, the Salmon Fork ACEC would be designated. However, under Alternative C, the ACEC would be open to salable and leasable minerals. Cross-country use of vehicles weighing 1,500 pounds curb weight and less during summer and 1,000 pounds curb weight during winter would be allowed year round and it would not be a ROW avoidance area.

4.6.1.5.5. Alternative D

In general, Alternative D anticipates the greatest amount of resource development and adopts the least restrictive VRM classes, allowing for major development while protecting visual resource in certain areas. Impacts beyond those discussed as common to all subunits in section 4.3.1.9 are discussed below.

Effects from Fish and Aquatic Species

There are five RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 205,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

No lands were identified as VRI Class I lands. Of VRI Class II lands within RCAs, one-hundred percent or 123,000 acres would be managed as Class IV allowing a visible level of change to the landscape. Of VRI Class III lands within RCAs (34,000 acres) one-hundred percent would be managed as Class IV lands allowing a visible level of change to the landscape. Of VRI Class IV lands within RCAs one-hundred percent (1,000 acres) would be managed as Class IV lands.

Effects from Visual Resources

Of VRI Class II lands (sixty-three percent), one-hundred percent (1,478,000 acres) would be managed as VRM Class IV. Of VRI Class III (nineteen percent, 448,000 acres) and Class IV lands (eighteen percent and 435,000 acres), one-hundred percent would also be managed as VRM Class IV, potentially resulting in a high level of change to landscape characteristics throughout the subunit. These lands have either a B or C rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

Effects from Wilderness Characteristics

Under Alternative D, wilderness characteristics would not be actively maintained on any lands. Visual resources would not be protected by management for wilderness characteristics.

Effects from Forest and Woodland Products

Impacts would be the same as under Alternative C, except commercial sales would be allowed in the Salmon Fork ACEC. Impacts to visual resources from commercial sales could potentially occur anywhere in the subunit (2,361,000 acres). The size and scope of impacts would depend on the size of the area and harvest techniques used. Impacts are discussed in section 4.3.1.9

Impacts Common to All Subunits. Given the lack of access and low timber values in the subunit, few if any, commercial sales are anticipated.

Effects from Land and Realty

Effects from land tenure and land use authorizations would be the same as Alternative C.

Effects from Leasable Minerals

Effects would essentially be the same as Alternative C, although minor constraints would apply to 16,000 fewer acres under Alternative D.

Effects from Locatable Minerals

Same as Alternative C.

Effects from Travel Management

Same as Alternative C.

Effects from Special Designations

Same as Alternative B, the Salmon Fork ACEC would be designated. Management of the ACEC would be similar to Alternative C.

No lands were identified as VRI Class I lands. Of VRI Class II lands within the ACEC, one-hundred percent or 549,000 acres would be managed as Class IV allowing visual changes to the natural landscape to occur. Of VRI Class III lands within the ACEC (51,000 acres) one-hundred percent would be managed as Class IV lands allowing visual changes to the natural landscape to occur. Of VRI Class IV lands within the ACEC one-hundred percent (20,000 acres) would be managed as Class IV lands.

Same as Alternative C, no rivers would be recommended suitable for inclusion to the NWSR.

4.6.1.5.6. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs and adopts more of a blend of VRM classes that would allow major development while protecting visual resources in certain areas. It has the second highest percentage of VRM Class II lands of all Alternatives. Class II allows a low level of change to the characteristic landscape where management activities may be seen but not attract the attention of the casual observer.

Effects from Fish and Aquatic Species

Same as Alternative B, 28 Riparian Conservation Areas (RCAs) are identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 624,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

No lands were identified as VRI Class I lands. Of VRI Class II lands, one-hundred percent or 351,000 acres would be managed as Class II. Of VRI Class III lands (212,000 acres) one-hundred

percent would be managed as Class II lands resulting in preservation of the existing visual character of these lands. Of VRI Class IV lands one-hundred percent (61,000 acres) would be managed as Class II lands resulting in preservation of the existing visual character of these lands.

Effects from Visual Resources

No lands were identified as VRI Class I lands. Of VRI Class II lands (sixty-three percent), approximately thirty-four percent (803,000 acres) would be managed as VRM Class II allowing a low level of change. Approximately twenty-nine percent (674,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have an A rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Of VRI Class III lands (nineteen percent), ten percent (236,000 acres) would be managed as VRM Class II allowing a low level of change, while nine percent (212,000) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have a B rating for scenic quality, a medium sensitivity, and occur in the Foreground-Middleground distance zone.

Of VRI Class IV lands (eighteen percent), four percent (92,000 acres) would be managed as VRM Class II allowing a low level of change. Approximately fifteen percent (343,000 acres) would be managed as VRM Class IV potentially resulting in a high level of change to landscape characteristics. These lands have either a B or C rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

In summary, 1,131,000 acres will be managed as VRM Class II, and 1,229,000 acres will be managed as VRM Class IV. No lands (acres) will be managed as VRM Class I or VRM Class III.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple use. Wilderness characteristics would be maintained on 1,114,000 acres, by limiting activities that impact wilderness characteristics of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation.

No lands were identified as VRI Class I lands. Of VRI Class II lands where wilderness characteristics would be maintained, one hundred percent or 343,000 acres would be managed as Class II lands. Of VRI Class III lands (nineteen percent) where wilderness characteristics would be maintained, one hundred percent (235,000 acres) would be managed as VRM Class II allowing a low level of change. These lands have either a B or C rating for scenic quality, a medium sensitivity, and occur in all three distance zones. Of VRI Class IV lands (eighteen percent) where wilderness characteristics would be maintained, one hundred percent (92,000 acres) would be managed as VRM Class II allowing a low level of change. These lands have either a B or C rating for scenic quality, a medium sensitivity, and occur in all three distance zones.

Effects from Forest and Woodland Products

Under Alternative E, personal use of timber and forest products, commercial use of forest products, and commercial timber salvage would be allowed on all BLM-managed lands (2,360,000 acres) with impacts the same as Alternative C.

Impacts from commercial timber sales (large and small) would be considered on all BLM-managed lands except the Salmon Fork ACEC. These acres (623,000 acres) would be protected from impacts associated with commercial timber sales the same as Alternative C.

Effects from Land and Realty

Effects from land tenure and land use authorizations would be the same as Alternative C.

Effects from Fluid Leasable Minerals

Under Alternative E, 1,813,000 would be closed to fluid leasable minerals, protecting visual resources in these areas (Maps 69 and 40). Closed areas include the Salmon Fork ACEC, RCAs, and the Black River watershed.

Approximately 547,000 acres would be open to fluid mineral leasing subject to Standard Lease Terms, Fluid Mineral Leasing Stipulation and Standard Operating Procedures. No development of fluid minerals is anticipated over the life of the plan. Seismic exploration could occur in open areas. Impacts such as creation of green trails and the removal of vegetation in straight lines causing changes to color, line and texture, could occur. Although a smaller area would be open, impacts from seismic exploration would be the same as Alternative B.

Effects from Solid Leasable Minerals

Under Alternative E, the areas described as closed to fluid mineral leasing above, would also be closed to solid leasable minerals. These actions would protect visual resources. Approximately 547,000 acres would be open to solid mineral leasing. However, no solid mineral exploration or leasing is anticipated during the life of the plan, limited the potential for impacts.

Effects from Locatable Minerals

Closure of 1,813,000 acres to locatable minerals, would protect visual resources in these areas (Map 43). Closed areas include the Salmon Fork ACEC, RCAs, and the Black River watershed. This would protect visual resources by not allowing surface-disturbing activities associated with mineral development.

Approximately 547,000 acres would be open to locatable mineral entry and associated surface-disturbing activities. The impacts from the extraction of locatable minerals would vary depending on the methods used, the size of operation and the number of mines. It is anticipated that mining will not take place during the life of this plan due to lack of access and low mineral values. Thus impacts are not anticipated.

Effects from Salable Minerals

Same as Alternative C.

Effects from Travel Management

Same as Alternative C.

Effects from Special Designations

Under Alternative E, the Salmon Fork ACEC would be designated. The 623,000 acres ACEC would be closed to fluid and solid leasable minerals, and locatable minerals but open to salable minerals.

No lands were identified as VRI Class I lands. Of lands within the ACEC with a VRI Class II, one-hundred percent or 549,000 acres would be managed as Class II, lands with a VRI Class III (51,000 acres), one-hundred percent would be managed as Class II lands while lands with a VRI of Class IV, one-hundred percent (23,000 acres) would be managed as Class II lands.

Same as Alternative C, no rivers would be recommended suitable for inclusion to the NWSR.

4.6.1.6. Wilderness Characteristics Upper Black River Subunit

Summary of Effects

There are 2,357,000 acres identified within the Upper Black River Subunit as having wilderness characteristics of size, naturalness, and the opportunity for solitude or a primitive unconfined type of recreation experience. Managing lands for wilderness characteristics would limit many surface-disturbing activities. See section 4.3.1.10 Impacts Common to All Subunits for impacts to wilderness characteristics. Alternative B would protect the most acres for wilderness characteristics while Alternative A would not identify any acres as having wilderness characteristics. Alternative C provides a balance between protection and resource use while Alternative D provides for resource development and protects the least amount of land for wilderness characteristics. Alternative E emphasizes other multiple uses while applying management restrictions to reduce impacts to wilderness characteristics.

4.6.1.6.1. Alternative A (No Action)

No lands are managed for wilderness characteristics under this Alternative. Of the 2,357,000 acres identified as having wilderness characteristic, none would be directly managed to protect those values. Other actions and management strategies, and the remote nature of the area may help protect those values indirectly. The entire subunit is currently closed to locatable and leasable minerals.

4.6.1.6.2. Alternative B

Of the 2,357,000 acres identified as having wilderness characteristic, one-hundred percent, would be directly managed to protect those values. The entire subunit would be closed to locatable and leasable mineral entry. Additionally, these lands are very remote and difficult to access. Activities that would negatively affect wilderness characteristics are not expected to occur over large acreages.

4.6.1.6.3. Alternative C

Of the 2,357,000 acres identified as having wilderness characteristic, 621,000 acres (twenty-six percent), would be directly managed to protect those values. These areas include the Salmon Fork ACEC and thirteen RCAs. Other actions and management strategies may help protect wilderness values indirectly on the remaining 1,740,000 acres. Leasable mineral exploration or development

would possible on 1,740,000 acres; while the entire 2,357,000 acres would be open to locatable minerals, the reasonably foreseeable development scenario does not suggest any development during the life of the plan. It would take several years to modify existing withdrawals. Mineral potential is very low and mining would be unlikely. Oil and gas leasing is not anticipated although a very limited amount of seismic exploration could occur in the southern part of the subunit. Even if all development is realized it would affect much less than one percent of all available acres. If mining-related exploration occurred, naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Additionally, these lands are very remote and difficult to access. Activities that would negatively affect wilderness characteristics are not expected to occur over large acreages.

4.6.1.6.4. Alternative D

Of the 2,357,000 acres identified as having wilderness characteristic, 0 acres, would be directly managed to protect those values. As in Alternative C, other actions and management strategies may help protect wilderness values in the subunit. Mineral exploration or development would be possible in the entire subunit however the reasonably foreseeable development scenario does not suggest a any development during the life of the plan. It would take several years to modify existing withdrawals. Mineral potential is very low and mining would be unlikely. Even if all development is realized it would affect less than one percent of all available acres. If mining-related exploration occurred, naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Additionally, these lands are very remote and difficult to access. Activities that would negatively affect wilderness characteristics are not expected to occur over large acreages.

4.6.1.6.5. Alternative E (Proposed RMP)

Of the 2,356,000 acres identified as having wilderness characteristics, those characteristics would be maintained on 1,114,000 acres by limiting activities that impact size, naturalness and opportunities for solitude or primitive and unconfined recreation. Mineral exploration or development would be possible on 547,000 acres, however the reasonably foreseeable development scenario does not suggest a any development during the life of the plan. It would take several years to modify existing withdrawals. Mineral potential is very low and mining would be unlikely. Even if all development is realized it would affect less than one percent of all available acres. If mining-related exploration occurred, naturalness would be impacted within the view shed of the development until the site was reclaimed to the extent that it appeared natural looking see section 4.3.1.10 Impacts Common to All Subunits. Additionally, these lands are very remote and difficult to access. Activities that would negatively affect wilderness characteristics are not expected to occur over large acreages.

4.6.1.7. Wildlife Upper Black River Subunit

Summary of Effects

The Upper Black River subunit is generally very remote and infrequently visited. Little is known of wildlife resources in the area and so impacts are difficult to predict. Due to its remoteness (high transportation cost) and mineral potential considered generally low, little resource development or

motorized vehicle use is predicted, even in alternatives which open nearly the entire area to such uses. As a result, few broad-scale impacts are anticipated in any alternative during the life of the plan. However, local impacts may occur and mineral resources may be more abundant than predicted and/or the development of resources on private lands may make development on BLM lands more economic. Mining claims carry development rights which could have unpredictable long-term effects on wildlife resources. Designation of the ACEC and closing it to locatable minerals (in Alternatives B and E) will protect wildlife resources in a large portion of the area where subsistence use is most prevalent. In Alternative E, the Salmon Fork ACEC, RCAs, and the Black River watershed will remain closed to locatable and leasable mineral development (77 percent of the subunit). This will prevent potential impacts to wildlife habitats in these areas, which includes the majority of known bald eagle nesting habitat.

4.6.1.7.1. Effects Common to All Alternatives

4.6.1.7.2. Alternative A (No Action)

Effects from Leasable and Locatable Minerals

There will be little to no effects from mining. The entire unit is withdrawn from mineral leasing, location, and entry. There are no existing leases or existing mining claims. Exploration activities are unlikely.

Effects from Recreation and Travel Management

The area is managed in custodial manner, no recreation management areas are identified. Use of motorized vehicles is unrestricted; however, the area is generally very remote and little motorized use occurs. The subunit is most accessible in winter by snowmobiles; the most accessible portion are lands occurring east of Circle. Impacts from a small number of federally qualified subsistence users, winter trappers, and occasional summer recreationists are very small. Motorized boats are permitted (as in all alternatives) and summer cross-country OHV use is allowed throughout the subunit. Large OHVs are permitted, which could cause localized impacts to habitat, but otherwise, impacts are anticipated to be low, due to the low level of existing and expected motorized use. OHV use may occur in the area east of the Yukon River from Circle through use of old seismic exploration trails. OHVs transported up to the Salmon Fork via riverboat could possibly be used in that area, but such use is likely to be uncommon. Area- or season-specific closures could be implemented to protect resources at risk of impact.

4.6.1.7.3. Alternative B

Effects from Leasable and Locatable Minerals

Same as A. The entire subunit remains closed to mineral entry and leasing.

Effects from Recreation and Travel Management

Similar to Alternative A, but OHVs would be limited to 1,000 pounds curb weight and summer OHV use would not be allowed within the Salmon Fork ACEC. Little recreational and vehicular use is expected and so impacts are expected to be very low. New restrictions can be developed if resource impacts develop or become expected.

Effects of Special Designations

Under Alternative B, the Salmon Fork Black River drainage is designated as the Salmon Fork ACEC (Map 69) and is closed to locatable mineral entry, leasable minerals, and salable minerals. It will be retained in federal management and be a right-of-way avoidance area. This will serve to maintain the Salmon Fork area in its current primitive condition with primary land uses being subsistence hunting and trapping. The entire subunit is closed to commercial timber sales. Although winter snowmobiles would be allowed, remoteness would limit the number and intensity of use. The ACEC designation would maintain habitat for Porcupine caribou, bald eagle, and other wildlife, including those used for subsistence. The allowance of motorized boats on the Salmon Fork is a continuation of the current situation. Although motorized activity may affect nesting eagles or other raptors, the level of use is very low and impacts should be minor.

The Salmon Fork is recommended as suitable as a WSR. Until a non-designation decision would be made by Congress, management would preserve ORVs, including a far northern nesting population of bald eagles (at the Arctic Circle). Management as a WSR would benefit this and other wildlife resource values.

4.6.1.7.4. Alternative C

Effects from Locatable and Leasable Minerals

The entire subunit is open to locatable minerals. Only the Salmon Fork ACEC (621,000 acres) would be closed to leasable minerals. The leasable mineral potential is generally considered to be low (except on lands near Circle), and the area is mostly very remote. Seismic oil and gas exploration is predicted to be unlikely, but could potentially occur on lands with high oil and gas potential (those near Circle). The locatable mineral potential is also considered to be low and no mining operations are predicted for the life of the plan. However, the area has also had little exploration activity and potential may be underestimated. Some exploration will likely occur.

Riparian conservation areas (section 2.9.2.1.1.3 Fish and Aquatic Species) are designated in only two drainages (the tributaries and mainstem of the Kandik river and Salmon Fork, Map 12). In these areas, RCAs will reduce potential impacts of locatable mineral development (particularly placer mining) on riparian and aquatic habitats by improving reclamation.

Little is known of wildlife resources in this subunit, limiting our ability to predict impacts. Dall sheep are thought to occur only sporadically in a few areas along the Canada border. Other than seasonal restrictions on aircraft activity in SOPs (Appendix A), there are no specific protections for Dall sheep. Caribou of the Porcupine Herd occur in the area during winter and exploration or production could potentially create local displacement and some fragmentation of habitat. Given the limited exploration and development of locatable and leasable minerals expected, impacts to wildlife are expected to be correspondingly limited, and mostly local in extent. If mining roads or trails remain un-connected to a highway system, impacts would be lower than those in more accessible areas.

Effects from Recreation and Travel Management

Effects would be similar to Alternative B with the exception that because summer use OHV is allowed in the Salmon Fork ACEC, potential for effects relative to Alternative B may increase slightly.

Effects from Special Designations

The Salmon Fork ACEC would be closed to salable and leasable minerals, but open to locatable minerals. Stream reclamation standards of RCAs would also apply to the entire ACEC, reducing impact potential slightly to moderately.

No rivers would be recommended as suitable for designation. Impacts to nesting bald eagles under this alternative are expected to be low, but disturbance or changes in water quality could occur if substantial mining activity occurs on the Salmon Fork or tributaries.

4.6.1.7.5. Alternative D

Effects from Locatable and Leasable Minerals

As in Alternative C, the entire subunit is open to locatable and leasable minerals, including the Salmon Fork ACEC. A few tributaries of the Salmon Fork and Kandik rivers which were designated as RCAs in Alternative C are not designated in this alternative (Map 13). Impacts will be similar to those identified in Alternative C, except that fewer RCAs are designated. Impacts will depend on actual levels of exploration, development, and claim staking.

Effects from Recreation and Travel Management

Same as Alternative C.

Effects from Special Designations

The Salmon Fork ACEC (621,000 acres) would be open to locatable mineral entry and it would be open to mineral leasing with minor constraints. In this alternative ACEC management intent remains the same, but management decisions differ little from the rest of the subunit, except that leasing will be subject to minor constraints.

No rivers would be recommended as suitable for designation, as in Alternative C. However, there may be some potential for impacts to nesting bald eagles and other wildlife under this alternative, because mining claims may be established and mineral leasing may occur.

4.6.1.7.6. Alternative E (Proposed RMP)

Effects from Locatable and Leasable Minerals

The Salmon Fork ACEC, RCAs, and the Black River watershed (77 percent of the subunit) are closed to locatable and leasable minerals, while the rest of the subunit is opened. The leasable mineral potential is generally considered to be low (except on lands near Circle), and the area is mostly very remote. Seismic oil and gas exploration is predicted to be unlikely, but could potentially occur on lands with high oil and gas potential (those near Circle). The locatable mineral potential is also considered to be low and no mining operations are predicted for the life of the plan in the RFD scenario. However, the area has also had little exploration activity and potential may be underestimated. Some exploration may occur.

Riparian conservation areas (section 2.7.2.1.1.3 Fish and Aquatic Species) are designated in 22 drainages outside of the ACEC (Map 12). This expanded set of RCAs (relative to Alternative C) will be closed to locatable and leasable minerals in Alternative E and so will reduce potential

impacts of locatable mineral development (particularly placer mining) on riparian and aquatic habitats.

Little is known of wildlife resources in this subunit, limiting our ability to predict impacts. Dall sheep are thought to occur only sporadically or in low density in a few areas in the Keele Range and to the south near the Canada border. There are no specific protections for Dall sheep. Caribou of the Porcupine Herd occur in the area during winter and exploration or production could potentially create local displacement and some fragmentation of habitat. The subunit is reported by local residents to support moose populations in Yukon Flats and include important moose calving habitat, but we have no data on moose movements in the area. Localized, small-scale projects would not likely measurably impact subunit moose population. Given that 77 percent of the subunit would remain closed, and the limited exploration and development of locatable and leasable minerals expected, impacts to wildlife are expected to be correspondingly limited, and mostly local in extent. If mining roads or trails remain unconnected to the Alaska highway system, impacts would be lower than those in more accessible portions of the planning area.

Effects from Recreation and Travel Management

Effects would be similar to Alternative B with the exception that because summer use OHV is allowed in the Salmon Fork ACEC, potential for effects relative to Alternative B may increase slightly.

Effects from Special Designations

The Salmon Fork ACEC would be closed to leasable and locatable minerals. The stream reclamation standards applicable to RCAs would also apply to the entire ACEC, reducing impact potential slightly to moderately.

No rivers would be recommended as suitable for designation.

4.6.1.7.7. Cumulative Impacts

Although lands in this subunit are considered generally of low potential for mineral development, several large blocks of land have been conveyed to Native corporations, indicating substantial mineral potential. Mineral development on those lands could effect wildlife resources on adjacent BLM lands, especially if road access were developed. The portion of the subunit which will be opened to staking of mining claims will vary from 100 percent in alternatives C and D to 23 percent in E. Staked claims may have effects beginning well beyond the life of the plan. See also section 4.3.1.12.6 Cumulative Effects, Wildlife.

4.6.2. Resource Uses

4.6.2.1. Locatable Minerals Upper Black River Subunit

Summary of Effects

The Upper Black River Subunit has low known locatable mineral potential and activity would be limited, despite the large acreage available under some alternatives. Alternatives A and B would not open up any lands to mineral entry. Alternatives E, C, and D would open from 547,000 acres to 2.36 million acres.

4.6.2.1.1. Effects Common to All Alternatives

State- and Native-selected lands will remain segregated from mineral entry and location until final land title has been established. New mining operations on withdrawn lands will require a validity exam prior to approval of a Plan of Operation. All active mining operations will be required to submit a plan of operation if the 1,000 ton bulk sample is exceeded (3809.11(b)). Mining operations using cyanide in the processing of amenable ores will require a Plan of Operations. Mining claim surface occupancy is guaranteed but must remain reasonably incident to the current levels of mining activity. Bonding is required of all mining operations other than those grandfathered. Reclamation of surface disturbance is required. Undue and unnecessary degradation will remain the standard for mining operations on BLM lands. The right of reasonable access across BLM lands to unpatented federal mining claims is assured. Cultural resources encountered during surface-disturbing activities are subject to the Antiquities Act. Economic impacts of mining decisions are analyzed in section 4.6.4.1 Economics Upper Black River Subunit.

4.6.2.1.2. Alternative A (No Action)

Under Alternative A, the ANCSA 17(d)(1) withdrawals would not be revoked and there are no existing federal claims. This alternative would offer no process to address these closures.

4.6.2.1.3. Alternative B

Under Alternative B, the entire subunit would remain closed to locatable mineral entry. This alternative would offer no process to address these closures.

4.6.2.1.4. Alternative C

Under Alternative C, 2,361,000 acres would be available to locatable mineral entry. The drainages in this subunit have low potential for mining. Existing data does not support anything beyond low potential within the subunit. Exploration efforts to date have found the geology in this area is not conducive to locatable minerals. Mining activity is not considered reasonably foreseeable in the life of the RMP. The effects of opening the subunit to mining would be minimal.

4.6.2.1.5. Alternative D

Same as Alternative C.

4.6.2.1.6. Alternative E (Proposed RMP)

Under Alternative E, 547,000 acres would be available to locatable mineral entry. 1,813,000 acres in Salmon Fork ACEC, RCAs, and Black River watershed not available. As in other alternatives, mineral potential is low and mining activity is not considered reasonably foreseeable. The effects of opening 23 percent of the subunit to mining would be minimal.

4.6.2.1.7. Cumulative Impacts

Closures and lack of infrastructure within the subunit may affect exploration of locatable minerals given the low resource potential as known from existing data. Impacts to locatable minerals that are individually minor may cumulatively reduce exploration and production of commodities from public lands. Factors that affect mineral extraction and prospecting include, but are not limited to, such things as permitting and permitting delays, regulatory policy, public perception and concerns, travel management, transportation, mitigation measures, proximity to sensitive areas (such as ACECs), low commodity prices, taxes, and housing and other necessities for workers. The BLM has no control over many of these factors. Most of these factors result in additional costs and/or permitting delays that can individually or cumulatively add additional costs to projects.

Lack of access to public land could reduce the amount of mineral exploration and development that may occur. If mineral resources were discovered in other ownerships, they may not be developed if the adjacent public lands are withdrawn from mineral entry, because development may not be economically feasible if the deposit crosses ownerships and only a portion is available for development.

Alternatives A and B are the most restrictive to mineral development and would perpetuate the closure of more than 2 million acres to the staking of new mining claims. . The entire subunit is closed with emphasis placed on other resources.

Alternatives C and D would increase the number of acres open to staking of mining claims in the region by more than 2 million acres. Likewise Alternative E would increase the number of acres by 547,000 acres.

4.6.2.2. Recreation Upper Black River Subunit

Summary of Effects

Effects on recreation management from the proposed alternatives would result in a wide range of possible outcomes. Proper resource management, including site-specific measures to protect healthy, functioning watersheds, riparian areas, and associated fish and wildlife habitats, would result in short- and long-term, beneficial impacts to fish and game related recreation use.

Special designations and management applied to these areas, including ACECs and WSRs, would further protect the region, potentially increasing wildlife numbers that benefit wildlife viewing, hunting, and fishing opportunities. Proposed management in ACECs and WSRs would encourage recreation activities of a more non-motorized, Semi-Primitive nature. As the size and scope of these special designations increase, opportunities for non-motorized forms of recreation would also increase. Negative effects from these designations would also arise, if additional restrictions were placed on OHV use and other recreational activities.

All lands (2,361,00 acres) in the Upper Black River Subunit under all action alternates, would be managed for custodial actions only, addressing visitor health and safety, user conflict, and resource protection issues. Land, water, and snow based activities would continue to remain the focus in this area, providing access for the commonly conducted activities of hunting, fishing, trapping, and gathering of edible plants and berries.

Alternative C best meets the goal of providing for multiple recreation use, while sustaining the recreation-resource base and other sensitive resource values of the region. Alternative B

emphasizes less motorized recreation use in a more primitive setting, while Alternatives A, C, D and E offer slightly more motorized recreation opportunities.

4.6.2.2.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Under all alternatives, the effects of forest and woodland products harvest would result in minimal impacts to recreation management. Current levels of firewood collection, commercial harvests, and forest products gathering would continue to be sustained without significant resource damage. However, if significant sales occurred, due to bark beetle infestations or from commercial timber harvests, recreational users would see increased trails, potential dislocation of wildlife, and alteration of scenic viewsheds. Although the areas open to commercial uses vary between alternatives, the low demand and lack of timber resource would limit these uses in all alternatives.

Effects from Recreation

Under all alternatives, recreation management would continue to provide for custodial actions only, through minimal facilities, structures, and regulations, except when deemed necessary to address visitor health and safety, user conflicts, and resource protection issues. Together, these actions would directly affect recreation management by ensuring that land- and water-based recreation opportunities continue to exist in the Upper Black River Subunit. No recreation setting character settings would apply.

Special Recreation Permits would continue to be issued as appropriate, allowing managers to provide for safe and enjoyable recreation opportunities at fair and allowable levels. This would minimize user conflicts while ensuring that recreation activity levels do not negatively impact the recreation-resource base and other sensitive resource values of the region.

Effects from Travel Management

Under all alternatives, all forms of non-motorized use would be allowed, providing users with opportunities for float-boating and hiking. Motorboat and aircraft use would also be unrestricted. Winter use (October 15 through April 30) of snowmobiles of 1,000 pounds curb weight and less would be allowed, providing users with winter access for subsistence, traditional, and recreational activities.

4.6.2.2.2. Alternative A (No Action)

Effects from Visual Resources

No visual management classes have been established under Alternative A. Impacts to visual resources would be evaluated and mitigated as proposals for development or permits are received.

Effects from Locatable Minerals

There would be no effects from locatable minerals as the entire subunit is withdrawn from mineral entry and there are no existing mining claims.

Effects from Travel Management

Alternative A provides the most motorized public access of any of the alternatives, as OHV use would remain generally unrestricted due to the lack of travel management decisions. Allowing this level of continued OHV use would not address future resource and user conflict issues and could result in emergency closures to protect the recreation-resource base and other sensitive resource values of the region. These actions could also result in long-term, detrimental impacts to scenic viewsheds that enhance the quality of recreational experiences for other recreation users. Thus, while this alternative would offer the most opportunities for recreational activities that involve the use of motorized travel, including hunting and OHV riding; fewer opportunities would exist for recreational users seeking a primitive, non-motorized type of experience. These effects would likely be minimal due to the lack of access and low levels of motorized use likely to occur in the subunit.

4.6.2.2.3. Alternative B

Effects from Visual Resources

Under Alternative B, the entire Upper Black River Subunit would be managed as a VRM Class II. This decision would have long-term, beneficial impacts on recreational activities that include scenic qualities as part of the experience. Minor effects may result if restrictions are placed on OHV use, in areas that possess a moderate level of recreation demand. Currently, there are no areas of moderate demand in the subunit due to its remote location and lack of access.

Effects from Wilderness Characteristics

Under Alternative B, almost the entire subunit (2,357,000 acres) would be managed for the maintenance of wilderness characteristics. This would provide additional opportunity for those individuals seeking a primitive and unconfined recreation experience and would ensure that the opportunity remains available for future recreation users.

Effects from Minerals

Under Alternative B, the entire subunit would be closed to locatable mineral entry and fluid leasable minerals, and there would be no effects. The Salmon Fork ACEC (621,000 acres) would be closed to salable minerals while remainder of the subunit (2,360,000 acres) would be open to salable minerals which could result in increased access for recreational activities.

Effects from Travel Management

Under all action alternatives, travel management decisions would provide for a range of motorized and non-motorized recreation experiences, while protecting resource values and minimizing user conflicts. This comprehensive approach to travel management would allow the BLM to sustain recreation opportunities and experiences, visitor access and safety, and natural resources of the subunit.

Under Alternative B, travel within the Black River Subunit would be limited to the summer-use of OHVs 64 inches or less in width and weighing 1,500 pounds curb weight and less outside of the Salmon Fork ACEC, no summer OHV use within the ACEC, and the winter use of snowmobiles of 1,000 pounds curb weight and less and 50 inches or less in width throughout the entire subunit. All other forms of OHV use would require a permit or approved plan of operation. These management actions, while promoting the effects of special designations through restricting summer-access to the Salmon Fork ACEC, would negatively impact those users who utilize

OHVs for accessing remote areas, and by those retrieving game. These effects would likely be minimal due to the lack of access and low levels of motorized use likely to occur in the subunit.

Effects from Special Designations

Under Alternative B, 621,000 acres would be designated as the Salmon Fork ACEC. This ACEC designation would help maintain or protect fish and wildlife habitat, potentially increasing fish and wildlife numbers, with beneficial impacts on fishing, wildlife viewing and hunting. Negative effects of ACEC designation could also result, if additional restrictions are placed on recreational activities (such as seasonal restrictions on OHV use) to reduce impacts on the recreation/resource base and other sensitive resource values of the region.

The Salmon Fork of the Black River would be recommended suitable for designation as “wild” under the Wild and Scenic Rivers Act. If designated by Congress, the effect of the inclusion of this river into the National Wild and Scenic Rivers System would ensure the protection and potential enhancement of the outstandingly remarkable wildlife values for which the river was identified, providing beneficial experiences for those individuals seeking wildlife and “wild” river related recreational opportunities.

4.6.2.2.4. Alternative C

Effects from Visual Resources

Effects would be the same as discussed under Alternative B for the Salmon Fork ACEC which would continue to be managed as VRM Class II with an objective to retain the existing character of the landscape. All remaining BLM-managed lands (1,740,000 acres) within the subunit would be assigned VRM Class IV where the objective is to allow for management activities which could create major modifications to the existing character of the landscape. However, every attempt would be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements. There would be less protection for recreational activities that include scenic quality or naturalness as part of the experience.

Effects from Wilderness Characteristics

Under Alternative C, the Salmon Fork ACEC (621,000 acres) would be managed for the maintenance of wilderness characteristics. This would provide additional opportunity for those individuals seeking a primitive and unconfined recreation experience and would ensure that the opportunity remains available for future recreation users.

Effects from Minerals

Under Alternative C, 621,000 acres in the Salmon Fork ACEC (thirty-seven percent of BLM lands) would be open to locatable mineral entry, while the remaining 1,740,000 acres would be closed. However, no mineral exploration or development is anticipated due to the lack of access and low mineral values of the area. In the unlikely case that claims were staked in the subunit, the development of necessary infrastructure for mineral activities could compromise the experiences of those recreation users whose expectations include a high degree of solitude and tranquility, within a naturally-appearing landscape. Adverse impacts on recreation users could also arise from intrusive noise and altered viewsheds produced by mining equipment and OHVs that are used in mining operations.

Closing the Salmon Fork ACEC (621,000 acres) to fluid leasable minerals and solid leasable minerals would protect recreation resources and naturalness by not allowing surface-disturbing activities related to mineral development. All other BLM lands would be open to fluid leasable minerals and solid leasable minerals impacting recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas on 104,000 acres.

All BLM-managed lands would be open to salable minerals and would impact recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Travel Management

Effects would be similar to Alternative B except more area would be made available for recreational activities that involve the summer-use of motorized travel. Under this alternative summer use of OHVs 64 inches or less in width and weighing 1,500 pounds curb weight and less would be allowed in the Salmon Fork ACEC, providing beneficial access and experiences for those individuals seeking motorized hunting opportunities. This would provide a direct benefit to recreational hunters who could use OHV's to retrieve legally harvested big-game within the ACEC. This effect would likely be minimal, due to the low levels of motorized use likely to occur in the ACEC.

Effects from Special Designations

Under Alternative C, 621,000 acres would be designated as the Salmon Fork ACEC. Effects would be the similar to those discussed under Alternative B, except the summer use of OHVs weighing 1,500 pounds curb weight and less would be allowed in the ACEC, providing some opportunity for additional access and experiences for those individuals seeking motorized recreational experiences. Given the lack of access to the subunit and the remote location of the ACEC, this effect would likely be minimal.

4.6.2.2.5. Alternative D

Effects from Visual Resources

Under Alternative D, the entire subunit would be assigned a VRM Class IV. Compared to Alternatives B and C, this would result in less protection of important viewsheds for recreation activities that include scenic quality or naturalness as part of the experience. In contrast, fewer restrictions would be placed on OHV use in areas that possess increasing recreation demand.

Effects from Wilderness Characteristics

No lands within the subunit would be specifically identified for maintenance of wilderness characteristics. However, the remote nature of the subunit and low level of activity likely to occur would likely result in maintenance of wilderness characteristics on most of the subunit.

Effects from Minerals

Under Alternative D, the entire subunit (2,361,000 acres) would be open to locatable mineral entry. Although additional lands would be opened to entry, effects would essentially be the same as Alternative C. The entire subunit would be open to fluid and solid leasable minerals subject to Standard Lease Terms, however, 623,000 acres would also be subject to minor constraints, protecting some recreation values.

All BLM-managed lands would be open to salable minerals and would impact recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Travel Management

Same as Alternative C.

Effects from Special Designations

Same as Alternative C.

4.6.2.2.6. Alternative E (Proposed RMP)

Effects from Visual Resources

Effects would be the similar to those discussed under Alternative B. The Salmon Fork ACEC, and the riparian conservation areas would be managed as VRM Class II with an objective to retain the existing character of the landscape (1,131,000 acres). All remaining BLM-managed lands (1,229,000 acres, fifty-two percent) within the subunit would be assigned VRM Class IV where the objective is to allow for management activities which could create major modifications to the existing character of the landscape. However, every attempt would be made to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements. Cross-country OHV use would be allowed on all lands subject to weight limits. By allowing these activities there would be less protection for recreational activities that include scenic quality or naturalness as part of the experience.

Effects from Wilderness Characteristics

Under Alternative E, no lands within the subunit would be managed to protect wilderness characteristics as a priority over other resource values and multiple use. Wilderness characteristics would be maintained on 1,114,000 acres, or forty-seven percent of the lands having wilderness characteristics, by limiting activities that impact wilderness characteristics of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation. The remaining 1,246,000 acres or fifty-three percent of the lands having wilderness characteristic would be managed for other resources as priority over protecting wilderness characteristics. However, the remote nature of the subunit and low level of activity likely to occur would likely result in maintenance of wilderness characteristics on most of the subunit.

Effects from Minerals

Under Alternative E, 1,813,000 acres in the Salmon Fork ACEC, RCAs, and Black River watershed (77 percent of BLM lands) would be closed to locatable mineral entry, while the remaining 547,000 acres would be open. However, no mineral exploration or development is anticipated due to the lack of access and low mineral values of the area. In the unlikely case that claims were staked in the subunit, the development of necessary infrastructure for mineral activities could compromise the experiences of those recreation users whose expectations include a high degree of solitude and tranquility, within a naturally-appearing landscape. Adverse impacts on recreation users could also arise from intrusive noise and altered viewsheds produced by mining equipment and OHVs that are used in mining operations.

Closing 1,813,000 acres to fluid and solid leasable minerals would protect recreation resources and naturalness by not allowing surface-disturbing activities related to mineral development. All other BLM lands (547,000 acres) would be open to fluid and solid leasable minerals potentially impacting recreation activities by development activities enhancing access, but also causing surface disturbance in otherwise natural areas.

All BLM-managed lands would be open to salable minerals and could potentially impact recreation activities by development activities enhancing access but also causing surface disturbance in otherwise natural areas.

Effects from Travel Management

Same as Alternative C.

Effects from Special Designations

Same as Alternative C except that the ACEC would be closed to locatable mineral entry and mineral leasing under Alternative E.

4.6.2.2.7. Cumulative Impacts

The effects of past, present and future actions, including the demand for recreational use, changes to the landscape as a result of surface-disturbing activities, and area closures or restrictions for resource protection, could affect recreation management in the Upper Black River Subunit.

Surface-disturbances resulting from forestry and mineral activities could cumulatively affect recreational users if activities were concentrated in recreated areas and if activities overlapped in duration. Effects to recreation as a result of these cumulative effects may include the potential dislocation of wildlife for hunting and viewing purposes, and/or the alteration of scenic viewsheds.

Special designations, including ACECs and WSRs, would further protect the Upper Black River Subunit, by preserving wildlife numbers that benefit wildlife viewing, hunting, and fishing opportunities. As the size and scope of these areas increase, opportunities for land- and water-based recreation uses that incorporate scenic viewsheds as part of the experience would also increase. However, in areas that require special management attention, to prevent irreparable damage to historic, cultural and scenic values, the need for additional restrictions could limit OHV use and other recreational activities.

Implementing any of the alternatives would not contribute to a significant change to recreational opportunities on public lands.

4.6.2.3. Travel Management Upper Black River Subunit

Summary of Effects

Effects on travel management from the proposed alternatives would result in a narrow range of possible outcomes. Site-specific measures to protect and preserve sensitive resource values could result in restrictions or emergency closures, but are unlikely. Seismic exploration could affect travel management through the initiation of a limited transportation network.

Alternative A would provide the greatest range of motorized opportunities due to the lack of OHV designations. Alternative B would provide the least range of motorized recreation experiences.

Alternatives C, D, and E would provide the same range of opportunities. However, there would be little difference between the alternatives due to the lack of access and the distance from population centers. Recreational users seeking a motorized experience are more likely to recreate in areas closer to Fairbanks.

Table 4.18. Comparison of OHV Designations by Alternative: Upper Black River Subunit

Area Designation	Alternative				E (acres)
	A (acres)	B (acres)	C (acres)	D (acres)	
Undesignated	2,361,000	0	0	0	0
Limited: no summer OHV use	0	621,000	0	0	0
Limited: summer OHV use 1,500 pounds curb weight and less	0	1,740,000	2,361,000	2,361,000	2,360,000
Limited: Winter OHV use 1,000 pounds curb weight and less	0	2,361,000	2,361,000	2,361,000	2,360,000

4.6.2.3.1. Effects Common to All Alternatives

Effects from Forest and Woodland Products

Under all alternatives, the effects of forest and woodland products harvest would result in minimal impacts to travel management. Current levels of firewood collection, commercial harvests, and forest products gathering would continue to be sustained without significant resource damage. However, if significant sales occur there could be an increase in roads and trails developed in the subunit. Although the areas open to commercial uses vary between alternatives, the low demand and lack of timber resource would limit these uses in all alternatives.

Effects from Locatable Minerals

Mineral development through suction dredging or placer mining activities has the potential to affect travel and transportation management by expanding the travel network. However, no locatable mineral activity is anticipated under any alternative due to the lack of mineral potential and access. Therefore, no effects would occur.

Effects from Recreation Management

Recreation management would be the same in all alternatives and effects on Travel Management would be minimal. The Upper Black River Subunit is managed as undesignated BLM-managed lands. The management approach would be custodial in nature, meaning resource allocations of capital and manpower would be minimal and to protect identified sensitive and valuable resources as directed by federal guidance and policy. Where recreation activities associated with Travel Management cause resource damage, an assessment will determine whether the area should be closed to the surface-disturbing activities or a sustainable route developed to protect sensitive or valuable resources. Currently, recreational use of the area is very low and this is expected to remain the case over the life of the plan.

4.6.2.3.2. Alternative A (No Action)

Effects from Leasable Minerals

There would be no effect to Travel Management because the entire subunit is withdrawn from the mineral leasing laws. No leasing or exploration would occur.

Effects from Travel Management

Under Alternative A, there are no OHV designations and motorized use is unrestricted. There are no travel management decisions in place, so there would be no effect.

4.6.2.3.3. Alternative B

Effects from Leasable Minerals

Under Alternative B, the entire subunit would remain closed to leasable and locatable minerals. Effects would be the same as Alternative A.

Effects from Travel Management

Under Alternative B, the subunit would be under a limited OHV designation. This designation would include a limitation of 50 inches or less and 1,000 pounds curb weight and less for winter OHV use and 64 inches or less and 1,500 pounds curb weight and less for summer OHV use. Also summer OHV use would not be allowed in the Salmon Fork ACEC (621,000 acres). Use of aircraft and motorized boats would be unrestricted. The effect of these limitations would be minimal as the subunit is generally inaccessible except by boat, aircraft, or snowmobile. If user-created routes occur and result in resource damage, sustainable trail construction or area closures could occur.

Effects from Special Designations

Under Alternative B, the Salmon Fork ACEC (621,000 acres) would be designated. The ACEC would be closed to summer OHV use. Summer use of OHVs by federally qualified subsistence users could be authorized by permit, but is not anticipated. Most subsistence access is by boat or snowmobile. Management of the ACEC for protection of fish and wildlife values could effect travel and transportation management if additional restrictions were placed on OHV use. However, impacts to travel are expected to be negligible, as the ACEC is remote and difficult to access, and the most likely forms of motorized access (boat, snowmobile, or aircraft) are not restricted.

The Salmon Fork of the Black River would be recommended suitable for designation as “wild” under the WSR Act. The river would be managed to preserve its outstandingly remarkable wildlife values. This could conceivably result in some future limitations on motorized travel in the river corridor. These impacts would be minor because the area is so remote and difficult to access, visitation would be low and the types of motorized vehicles used in the corridor would likely be limited to boats and snowmobiles.

4.6.2.3.4. Alternative C

Effects from Leasable Minerals

Under Alternative C, the Salmon Fork ACEC (621,000 acres) would be closed to leasable minerals. The rest of the subunit would be open. Seismic exploration could occur on high potential oil and gas areas near Circle (Map 87) but no leasing or development is anticipated. If seismic exploration

occurred and woody vegetation was cleared along seismic trails, these routes could be used as the beginning of a route network of winter trails, potentially increasing access into the southern part of the subunit. These effects would be minimal, as at most 20 miles of seismic route is anticipated.

Effects from Travel Management

Effects would be the same as Alternative B, except summer OHV use of 64 inches or less and 1,500 pounds curb weight and less would be allowed in the Salmon Fork ACEC.

Effects from Special Designations

Effects would be the same as Alternative B except summer OHV use would be allowed in the Salmon Fork ACEC. There would be no effect on Travel Management from WSRs because no rivers would be recommended as suitable for designation under the WSR Act.

4.6.2.3.5. Alternative D

Effects from Leasable Minerals

Same as Alternative C.

Effects from Travel Management

Same as Alternative C.

Effects from Special Designations

Same as Alternative C.

4.6.2.3.6. Alternative E (Proposed RMP)

Effects from Visual Resources

Under Alternative E, classification of the Salmon Fork ACEC and riparian conservation areas (1,114,000 acres) as VRM Class II would require any trail development to be designed using materials that blend with the surrounding landscape and resemble landscape characteristics of line, form, color and texture with minor changes allowed to landform and vegetation.

Effects from Leasable Minerals

Under Alternative E, 1,813,000 acres in the Salmon Fork ACEC and riparian conservation areas (77 percent of BLM-managed lands) would be closed to fluid and solid leasable minerals, while the remaining 547,000 acres or 23 percent would be open. Seismic exploration could occur on high potential oil and gas areas near Circle (Map 87) but no leasing or development is anticipated. If seismic exploration occurred and woody vegetation was cleared along seismic trails, these routes could be used as the beginning of a route network of winter trails, potentially increasing access into the southern part of the subunit. These effects would be minimal, as at most 20 miles of seismic route is anticipated.

Effects from Travel Management

Under Alternative E, all cross-country travel would be limited by weight and width for the entire subunit. Summer use would be limited to 64 inches or less in width and weighing 1,500

pounds curb weight or less without a permit. Winter use would be limited to 50 inches or less in width and weighing 1,000 pounds curb weight or less without a permit. Aircraft use would be unrestricted with minimal clearing of landing areas. Construction or formal improvement of landing areas would be by permit only.

Effects from Special Designations

Effects would be the same as Alternative B except summer OHV use would be allowed in the Salmon Fork ACEC. There would be no effect on Travel Management from WSRs because no rivers would be recommended as suitable for designation under the WSR Act.

4.6.2.3.7. Cumulative Impacts

With increased pressures from growing populations and advances in recreational vehicle technology, the Upper Black River Subunit may experience growth in travel-related land use and activity participation. If this occurs, the need for additional trails and mechanisms for managing these trails will become necessary. However, growth of OHV use would be limited as the subunit is inaccessible from existing roads and highways, is located north and east of the Yukon River, consists of terrain that is generally not suitable for summer OHV use, and is bordered by National Park Service lands on the south and National Wildlife Refuge lands on the north. The Yukon River is a barrier to summer access by OHVs, and use of OHVs on Yukon-Charley Rivers National Preserve and Yukon Flats NWR are limited.

Additional cumulative impacts are discussed in section 4.3.2.7 Travel Management, Impacts Common to All Subunits.

4.6.3. Special Designations

4.6.3.1. Wild and Scenic Rivers Upper Black River Subunit

Summary of Effects

There are currently no rivers designated within the National Wild and Scenic River System (NWSR) within the Upper Black River Subunit. Alternative B is the only alternative where river segments are recommended for inclusion to the NWSR. The Salmon Fork of the Black River is recommended suitable for designation as “wild” with outstandingly remarkable wildlife population and habitat values.

Management actions that protect the naturalness of the landscape such as wilderness characteristics, protection of fish and wildlife habitats, protection of vegetation, and recreation management that manages for more primitive experiences will help protect many of the Outstandingly Remarkable Values of river systems.

4.6.3.1.1. Alternative A (No Action)

Under Alternative A, no river segments are identified as suitable for inclusion to the NWSR. The BLM would not recommend that Congress designate any river segments.

4.6.3.1.2. Alternative B

In general, Alternative B anticipates a low level of resource development and is the only alternative where river segments are determined to be suitable for inclusion to the NWSR. The BLM would recommend that Congress designate one river segment. This recommendation would influence the Congressional decision and increase the likelihood of permanent legislative protection. Decisions are evaluated for effect on identified Outstandingly Remarkable Values, free-flowing character and water quality.

Through the Wild and Scenic Rivers Inventory (Appendix E, *Wild and Scenic Rivers Inventory*) the BLM has determined which rivers and streams are suitable for inclusion in the NWSR. The Salmon Fork in the Upper Black River Subunit was determined to be suitable with a classification of “wild” and outstandingly remarkable wildlife values. Any segment determined to be suitable must be managed for the protection of its Outstandingly Remarkable Values and free-flowing nature until such time as Congress acts upon the determination finding and either designates the river segment or removes it from consideration. If the segment is removed from consideration by Congress, the BLM would manage the segment according to the management provisions of the RMP. The determination of suitable is a policy determination.

Effects from Cultural and Paleontological Resources

Surface-disturbing activities (e.g., site excavation) have the potential to directly and indirectly impact water quality.

Effects from Fish and Aquatic Species

The identification of the three watersheds on the Salmon Fork of the Black River as Riparian Conservation Areas (Map 11) may have indirect impacts to water quality.

Effects from Soil, Vegetation, and Water Resources

Management of soil resources, vegetative communities, and watersheds for a properly functioning condition within riparian zones, uplands, wetlands and aquatic areas would directly and indirectly enhance water quality.

Effects from Visual Resources

“Wild” river segments would be managed as a VRM Class I with the objective to preserve the existing character of the landscape and provide for natural ecological changes. Very limited management activities may occur where the level of change to the characteristic landscape is very low and must not attract attention.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristics would indirectly protect the free-flowing characteristics and water quality.

Effects from Wildland Fire Ecology and Management

Wildland fires have the potential to destroy or harm habitat and populations of outstandingly remarkable wildlife values.

Effects from Wildlife

Management of a naturally functioning ecosystem would directly and indirectly protect outstandingly remarkable wildlife population and habitat values and water quality.

Effects from Lands and Realty

Consolidation of land ownership could indirectly enhance water quality by acquisition of lands adjacent to the headwaters of the river segment. Land use authorizations, such as leases and rights-of-way, could directly and indirectly impact outstandingly remarkable wildlife population values, directly impact free-flowing characteristics and indirectly impact water quality if authorized across or along the river segments. Closing 2,361,000 acres to locatable minerals would directly protect water quality, free-flowing characteristics and naturalness of the river segment.

Effects from Travel Management

Unrestricted non-motorized travel could directly impact water quality with the development of social travel routes. Unrestricted aircraft landings could indirectly impact water quality and outstandingly remarkable wildlife population values by allowing motorized access to remote areas.

Unrestricted winter motorized overland travel by OHVs weighing 1,500 pounds curb weight and less could indirectly impact water quality and outstandingly remarkable wildlife population values by allowing motorized access to remote areas. Closing the corridor to summer OHV use could indirectly enhance water quality and outstandingly remarkable wildlife population values by restricting motorized access to remote areas.

Effects from Special Designations

Designation and management of 621,000 acres within the Salmon Fork watershed as the Salmon Fork ACEC would protect outstandingly remarkable wildlife population and habitat values and indirectly enhance water quality due to limitations and restrictions on development.

The Salmon Fork of the Black River, totaling 52 miles and approximately 15,000 acres would be recommended for designation to the NWSR. The designation of this river by Congress would provide for greater protection of overall river values and of outstanding remarkable river values specifically. The amount of protection is dependent on the classification of the river segment. Management of suitable rivers would be coordinated with the State of Alaska.

Effects from Hazardous Materials

Environmental remediation activities such as the removal of surface or buried wastes from abandoned sites and removal of contaminated soils could enhance directly and indirectly water quality and outstandingly remarkable wildlife population values depending on the location of these activities.

Effects from Subsistence

Harvest of subsistence resources such as timber and other forest products may impact directly and indirectly the outstandingly remarkable wildlife population values if collection of these resources occurs at within the river corridor.

4.6.3.1.3. Alternative C

Same as Alternative A.

4.6.3.1.4. Alternative D

Same as Alternative A.

4.6.3.1.5. Alternative E (Proposed RMP)

Same as Alternative A.

4.6.3.1.6. Cumulative Impacts

Past, present and reasonably foreseeable actions that are relevant to Wild and Scenic Rivers management include oil and gas exploration, increases in motorized use on both water and adjacent lands, utility and transportation rights-of-way, recreation use, travel management, and use restriction to protect wildlife, fisheries and vegetative resources.

Cumulative effects will accrue from BLM management decisions in addition to activities on surrounding lands during and beyond the life of the plan. Much of the surrounding land base is other federal lands; however, there are Native corporation lands within the watershed and the headwaters is in Canada. Development of lands along waterways could have an indirect impact on other rivers by increasing the importance of river related values of free-flowing, water quality, scenic, recreation, geologic, fish and wildlife habitats and populations, cultural and historic on those other rivers.

Designation and management of the Salmon Fork ACEC and maintenance of wilderness characteristics, as well as measures to protect other resource values on adjacent federal lands would help protect river values. Proposed and current management in these areas would limit development and help maintain a more natural ecosystem with benefits to water quality and other river related values.

There are no existing components of the NWSR in the Upper Black River Subunit. Protection of river related values along eligible rivers in the subunit, the Yukon, Kandik, and Nation rivers, managed by the National Park Service, would continue until a decision is made by Congress to not add them to the NWSR. Protection of river related values along the proposed addition of the Salmon Fork of the Black River, with outstandingly remarkable wildlife values, would continue if designated by Congress. The BLM and other agencies could implement other means to protect river values if these segments are not included in the system.

4.6.4. Social and Economic

4.6.4.1. Economics Upper Black River Subunit

Summary of Effects

The economic effect in the Black River Subunit would be low. The primary effect would be from seismic exploration under Alternatives C and D.

4.6.4.1.1. Effects Common to All Alternatives

In addition to the effects discussed as common to all subunits in section 4.3.3.1 the following effects would occur in the Upper Black River Subunit.

The BLM assumes no locatable mineral mining or associated economic effects would occur in the Upper Black River Subunit during the life of the plan. Recreation use is expected to grow slowly with increased population in the region. Economic effects would be correspondingly low for all alternatives.

4.6.4.1.2. Alternative A (No Action)

Under Alternative A, economic effects would be limited to increase in currently allowed economic activities resulting from population growth. Since all BLM lands are currently are withdrawn from locatable mineral entry and leasing, there would be no economic effect from mining.

4.6.4.1.3. Alternative B

Under Alternative B, the entire Upper Black River Subunit would remain closed to locatable minerals and mineral leasing. There would be no economic effect, same as Alternative A.

4.6.4.1.4. Alternative C

Under Alternative C, one-hundred percent of the Upper Black River Subunit would be open to locatable minerals and seventy-four percent would be open to mineral leasing. Although, the entire subunit would be opened to locatable minerals, no mining activity is anticipated due to the lack of mineral potential and lack of access. Therefore, economic effects would be low.

Seismic exploration for oil and gas could occur on high occurrence potential oil and gas lands, but is unlikely during the life of the plan. Roadless exploration, in the form of seismic surveys, would occur in the winter after the tundra is frozen. Summer field sampling and reconnaissance would occur in using helicopter support.

Non-BLM lands in the Yukon Flats Basin could have approximately 130 to 212 2D or 3D line miles shot every five years. Initially, 2D seismic would be collected, followed by 3D to identify potential reservoirs. The number of line miles shot on BLM lands, including those in this subunit, would be less than 20 miles.

Jobs created during the seismic surveys could include: Superintendent, surveyors, recording crew, and caterers. Professional and technical employment in interpretation of survey findings would also occur outside the planning area. However, it is unlikely that additional jobs would result from exploration on BLM lands. The resulting additional taxes would be slight. See Table 4.16, "Estimated Employment from Seismic Surveys".

4.6.4.1.5. Alternative D

The effects from locatable minerals would be the same as Alternative C. The opening of additional acreage to mineral leasing would have no additional economic effect over Alternative C due to

the low oil and gas potential. The effects from seismic exploration for oil and gas would be the same as Alternative C.

4.6.4.1.6. Alternative E (Proposed RMP)

Although fewer acres would be opened to locatable minerals, the effects would be the same as Alternative C. The opening of acreage to mineral leasing would have no additional economic effect over Alternative C due to the low oil and gas potential. The effects from seismic exploration for oil and gas would be the same as Alternative C.

4.6.4.2. Environmental Justice Upper Black River Subunit

Summary of Effects

Effects to Environmental Justice populations in the Black River Subunit would be low under all Alternatives. Under Alternatives B, C, D, and E increases in recreation use could add income for the local population in villages of Beaver, Birch Creek, Chalkyitsik, Circle, Stevens Village, and Fort Yukon. If seismic survey activity occurred under Alternatives C, D, or E, there would be little effect on Environmental Justice populations.

4.6.4.2.1. Effects Common to All Alternatives

The BLM assumes no locatable mineral mining or associated economic effects would occur in the Upper Black River Subunit during the life of the RMP. Increases in recreation use could add income for the local Environmental Justice populations, if residents provide guiding or interpretive services.

4.6.4.2.2. Alternative A (No Action)

There would be no effects to the Environmental Justice population under Alternative A.

4.6.4.2.3. Alternative B

Under Alternative B, commercial outfitting or guiding permits issued by the BLM are expected to remain near the current level. Effects to the Environmental Justice population would be correspondingly low.

4.6.4.2.4. Alternative C

Under Alternative C, seismic exploration for oil and gas could occur, but is unlikely during the life of the plan. Therefore little effect on the Environmental Justice population would be anticipated. See Table 4.16, "Estimated Employment from Seismic Surveys" Estimated Employment Generated by Seismic Surveys for discussion of jobs resulting from work on BLM-managed lands. Effects from recreation would be the same as Alternative B.

4.6.4.2.5. Alternative D

Under Alternative D, environmental justice effects related to oil and gas and recreation would be essentially the same as Alternative C.

4.6.4.2.6. Alternative E (Proposed RMP)

Under Alternative E, environmental justice effects related to oil and gas and recreation would be essentially the same as Alternative C.

4.6.4.3. Social Conditions Upper Black River Subunit

Summary of Effects

Most impacts to individuals and groups are minor to moderate in part because other opportunities exist for the activities within the planning area and on nearby lands managed by the State of Alaska or a Native corporation. While it is possible for impacts for multiple resources to adversely affect individuals and groups in a cascading fashion, most nearby communities exhibit sufficient resiliency to adapt to change.

All individual programs would have minimal net positive or negative effect to social conditions and are not analyzed further. For further discussion, see Effects Common To All Alternatives in all Subunits.

4.6.4.4. Subsistence Upper Black River Subunit

Summary of Effects

The Upper Black River Subunit is extremely remote. Current uses of BLM-managed lands consist primarily of subsistence and casual recreation use. When resources are limited, federally qualified subsistence users would have priority use on federal public lands (ANILCA Title VIII § 802(2)).

Potential impacts to subsistence resources and uses would include displacement of resources and potential declines in resource availability due to disturbance in critical habitats or during critical times (e.g., calving periods). User conflicts could result in federally qualified rural residents being displaced from traditional use areas into less familiar, more distant areas where resources are less accessible. Relief from competition for fish and wildlife resources would be through regulations promulgated by the Alaska Boards of Fish and Game and the Federal Subsistence Board.

Lifetime use of resources by local subsistence users/consumers in the Upper Black River Subunit has been documented by Caulfield (1983), Sumida and Andersen (1990), and by the Council of Athabascan Tribal Governments (CATG unpublished 2015). At the time of analysis, data for Chalkyitsik from the CATG Upper Black River land use project were not available. Transfer of Traditional Ecological Knowledge during the scoping, government-to-government consultation, and public comment periods has been critical to the analysis of impacts to subsistence uses and resources.

Subsistence fishing on BLM lands in the Upper Black River Subunit has been documented by Caulfield (1983) to occur along the Salmon Fork and near the confluence of Bull Creek with Grayling Creek. The Salmon Fork ACEC encompasses the fishing areas identified along Salmon

Fork but not in the Grayling Creek area (Map 98). No fishing use areas are represented on the Upper Black River maps created for the CATG land use mapping project (preliminary 2015).

Black and brown bear, caribou, moose, furbearers and small game are recognized as subsistence wildlife resources in the subunit. In household surveys respondents from Chalkyitsik and Fort Yukon continued to report that the primary wild food resource is moose (Van Lanen 2012). Residents of Fort Yukon report harvesting moose on BLM-managed lands along the Salmon Fork, Tetthajik Creek and lower Wood River (Sumida and Andersen 1989). Over three harvest years from fall 2008 through spring 2011 Chalkyitsik and Fort Yukon residents reported harvesting moose on the Salmon and Grayling Forks and upper Black River (Fleener and Thomas 2003, Stevens and Maracle 2012, Van Lanen et al. 2012). Residents of Chalkyitsik report trapping for furbearers within the Grayling Fork and Runt Creek drainages, harvesting moose and bears along the Salmon Fork and Grayling Fork and harvesting caribou in the Grayling Fork drainage (Caulfield 1983). Management decisions vary by alternative in the ACEC and other BLM-managed lands and therefore impacts would differ by alternative.

Some land use decisions under the alternatives could potentially impact vegetative communities and indirectly impact fish and wildlife habitat, thereby affecting subsistence resources on and off BLM-managed lands. Impacts to vegetative communities are discussed in section 4.3.1.8.

No applications for rights-of-way have been received and few requests would be anticipated over the life of the plan. Impacts from other land use activities are discussed under the common to all alternatives or by alternative.

4.6.4.4.1. Effects Common to All Alternatives

In addition to effects discussed under Impacts Common to All Subunits (section 4.3.3.4 Subsistence), the following effects would occur in the Upper Black River Subunit.

Effects from Forest and Woodland Products

Based on existing data, primarily from Caulfield (1983) and CATG (preliminary 2015), subsistence use timber is harvested along the Black River east and west of the community of Chalkyitsik primarily on Yukon Flats NWR lands. Woodland products are harvested along the Grayling Fork of the Black River, including a small area of BLM-managed lands. Caulfield (1983) indicates that Fort Yukon and other communities harvest timber, including firewood and house logs, berries, bark and other forest plant materials in the upper Black River area but not on BLM-managed lands.

Caulfield (1979) documents no subsistence harvest of firewood, house logs, or timber on BLM-managed lands by residents of Circle. However, it is likely that residents of Circle harvest these resources on the BLM-managed lands surrounding the village, and could request free-use permits to do so. The entire subunit would be open to free-use permits under all alternatives, as regulated under the Nonsale Disposals Act 1878, amended for Alaska 1898 and 1938.

Personal use of timber products and commercial use of forest products would be allowed throughout the subunit under all alternatives. Subsistence use of timber products would be allowed as defined in ANILCA Section 803. Commercial timber sales and salvage timber sales would be prohibited in the subunit under Alternative B. Commercial sales could be considered under Alternatives C, D, and E, however not within the Salmon Fork ACEC in Alternatives C and E. Commercial timber salvage sales would be considered on all lands in Alternatives C, D,

and E. However, demand for commercial and salvage timber sales is expected to be minimal to nonexistent because of the remoteness of the area and the lack of commercially valuable timber.

Harvest or salvage of timber for local biomass projects would be allowed but would not be likely to occur on BLM-managed land in the Upper Black River Subunit (sections 2.6.3.4., 3.3.6.2., and 4.2.1.3.1). No significant restrictions to subsistence uses would be expected from any biomass projects.

Decisions on forest resources would not be expected to impact subsistence uses or resources in any of the alternatives.

Effects from Leasable Minerals

Most of the BLM-managed lands in the subunit have no or low potential fluid leasable minerals. The exception would be around the village of Circle, which has a high potential. No fluid mineral leasing or development would be anticipated, although seismic exploration could occur under some alternatives. The Salmon Fork ACEC would be closed to mineral leasing under Alternative C and the ACEC, RCAs, and Black River watershed would be closed in Alternative E. On BLM-managed lands in Alternative E, the upper Kandik, the Black River below its confluence with the Wood River, and upper Little Black River would be within RCAs.

No potential for solid leasable minerals has been identified in the subunit. Coal leasing has been deferred to a future RMP and would not occur under this plan. No impacts to subsistence uses or resources are anticipated from solid leasable minerals.

Effects from Salable Minerals

Although the amount of land available for salable minerals varies slightly by alternative, no demand for salable minerals would be anticipated over the life of the plan because distances to transport gravel from the Upper Black River to developed areas would be too far and therefore not economical. Thus no effects would be anticipated under any alternative.

Effects from Recreation

Recreation occurs at low levels in the Upper Black River Subunit. There are no developed sites associated with recreational activities on BLM-managed lands and none would be anticipated over the life of the plan. Most recreational use would occur during hunting seasons, primarily August and September. The current and reasonably foreseeable level of recreation in the subunit would not significantly impact subsistence resources or uses in the subunit.

Effects from Travel Management

Travel management prescriptions would allow unrestricted boat, aircraft, and non-motorized use, and cross-country winter use of snowmobiles (1,500 pounds curb weight and less) throughout the subunit under all alternatives. Cross-country summer use of OHV 1,500 pounds curb weight and less would be allowed throughout the subunit, except in Alternative B where no summer OHV use would be allowed within the Salmon Fork ACEC. Where OHV use would be allowed a permit would be required for any OHV over 1,500 pounds curb weight. For those uses requiring a permit, stipulations would be used to mitigate impacts to subsistence resources and uses.

Boat and winter cross-county snowmobile travel would be expected to be local and mostly in support of subsistence activities. Some use of recreational aircraft would be expected, mostly during hunting and fishing seasons.

With projections for population growth and advances in recreation vehicle technology increased demands in travel-related land use would be expected to occur across the planning area. Growth would be limited in the Upper Black River Subunit because there are no existing highways in the subunit, the Yukon River presents a barrier, and terrain is not suitable for summer cross-country use of OHVs. Impacts to subsistence resources and uses from motorized and non-motorized use under all alternatives would be minimal.

Effects from Special Designations

In general the Salmon Fork ACEC and RCAs would benefit subsistence resources and uses through heightened attention to maintaining fish and wildlife values within these areas. The Salmon Fork ACEC would be created to protect salmon spawning habitat and Porcupine caribou migration and wintering areas. The location and size of the ACEC would be constant throughout the action alternatives. Although the RCAs are not designations, in combination with the ACEC, they would protect many areas identified by local residents as important for harvest of subsistence resources, particularly in Alternatives B and E (Map 11).

4.6.4.4.2. Alternative A (No Action)

Present land management practices and levels of resource used would continue in accordance with existing laws, regulations and policy. Land use activities would continue to be analyzed through the NEPA process and include ANILCA Title VIII Section 810 evaluations. Through these processes, appropriate stipulations would be developed to mitigate any impacts identified.

OHV use would be unrestricted in the subunit. No recreation management area, RNA, ACEC or WSR designations would exist. The subunit is extremely remote and ongoing uses of BLM-managed lands would consist primarily of subsistence and casual recreation use.

Effects from Forest and Woodland Products

All types of forest product and timber uses could be considered throughout the subunit. In the past, demand for commercial forest products and timber has been nonexistent because of the remoteness of the area. Future demand for commercial uses would be expected to be nonexistent to low. Impacts to subsistence resources and uses would be expected to be negligible.

Effects from Lands and Realty

There would be no effects from changes in land tenure as no lands would be identified for disposal. Land use authorizations would be considered throughout the subunit. Few requests for land use authorizations would be expected. Little or no adverse impacts to subsistence from these decisions would be anticipated.

Effects from Leasable and Locatable Minerals

The entire subunit is currently and would continue to be withdrawn from mineral entry and leasing. There are no existing mining claims. Thus there would be no impacts to subsistence resources and uses from leasable or locatable minerals.

4.6.4.4.3. Alternative B

Effects from Forest and Woodland Products

Personal use of timber and commercial use of forest products would be allowed throughout the subunit. Commercial timber sales and salvage sales would not be allowed. Demand for commercial forest products and personal use timber would be expected to be minimal to nonexistent because of the remoteness of the area. Impacts to subsistence resources and uses would be expected to be negligible.

Effects from Lands and Realty

Under Alternative B the Salmon Fork ACEC would be retained; that is, the lands within the ACEC would not be considered for disposal. Private inholdings could be acquired from willing sellers. Parcels intermingled with Native village lands around Circle would be considered for acquisition or disposal for the purposes of consolidating land ownership. Consolidation of scattered parcels would simplify land status and benefit management and continued uses of subsistence resources. No adverse impacts would be expected from these actions.

The Salmon Fork ACEC would be a right-of-way avoidance area. Subsistence resources could benefit from this designation due to reduced disturbance from construction and maintenance activities or fragmentation of habitat, which could occur from rights-of-way development. Requests for rights-of-way in the rest of the subunit would be considered at the project level, allowing for mitigation of impacts to subsistence resources and uses. Few requests for rights-of-way would be expected. Little or no adverse impacts to subsistence uses from these decisions would be anticipated.

Effects from Leasable and Locatable Minerals

Under Alternative B the entire subunit would be closed to fluid and solid mineral leasing, and locatable minerals. The effect would be positive for subsistence resources and uses.

4.6.4.4.4. Alternative C

Effects from Forest and Woodland Products

Under Alternative C, timber salvage sales would be allowed on all BLM-managed lands and commercial timber sales would be allowed on all BLM-managed lands except in the Salmon Fork ACEC. Impacts to subsistence resources and uses would be expected to be negligible due to remoteness of area and lack of interest in commercial harvest of these resources.

Effects from Lands and Realty

Decisions and impacts from land tenure changes would be the same as Alternative B.

No right-of-way avoidance area would be designated under Alternative C. Requests for rights-of-way would be considered at the project level, allowing for mitigation of impacts to subsistence resources and uses. Few requests for rights-of-way authorizations would be expected. Little or no adverse impacts to subsistence would be anticipated from these decisions.

Effects from Leasable Minerals

The Salmon Fork ACEC (621,000 acres) would be closed to leasable minerals. The remaining BLM-managed lands would be open to leasable minerals under Alternative C with differing levels of constraints. Geophysical (seismic) exploration for oil and gas could be permitted on high potential lands near Circle. Impacts would be minimal and mitigated through SOPs and permit stipulations.

Effects from Locatable Minerals

The Salmon Fork ACEC would be open to locatable minerals. The remaining lands in the subunit would also be open. However, mineral potential is low, access is poor, and no mining activity would be anticipated. Impacts to subsistence resources would be minimal or nonexistent.

4.6.4.4.5. Alternative D

Effects from Forest and Woodland Products

Alternative D would be the same as Alternative C except commercial timber sales would be allowed in the Salmon Fork ACEC. Sales would be considered and analyzed at the project level. Saw timber in this area is not considered marketable, largely due to the distance to market, and it would be unlikely that a commercial sale would occur in this area over the life of the plan. Other effects from forest and woodland products are discussed in section 4.6.4.4.1 Effects Common to All Alternatives.

Effects from Land and Realty Actions

Same as Alternative C.

Effects from Leasable Minerals

All BLM lands, including the Salmon Fork ACEC, would be open to leasable minerals with differing levels of constraints. Due to low potential for leasable minerals, impacts to subsistence resources would be the same as Alternative C.

Effects from Locatable Minerals

Effects will be the same as Alternative C.

4.6.4.4.6. Alternative E (Proposed RMP)

Alternative E differs from Alternative C in that the Salmon Fork ACEC would be slightly larger (623,000 acres), 28 watersheds would be managed as RCAs, and the ACEC, RCAs, and Black River watershed would be closed to locatable and leasable minerals (1,813,000 acres).

Effects from Leasable and Locatable Minerals

Alternative E would have the least impacts and most benefits on subsistence resources and uses. Using existing literature, TEK comments from public comment meetings and ANILCA Section 810 hearings held in the communities in and adjacent to the subunit, and recent CATG reports and preliminary land use data mapping results, the area of closure (1,813,000 acres or 77 percent of the subunit) includes the most important subsistence use areas in the subunit.

Effects from Special Designations

Expansion of the Salmon Fork ACEC and adoption of the RCAs from Alternative B would further protect resources and uses important to local rural residents. Special management decisions in the ACEC for commercial timber and commercial timber salvage sales, land tenure, fluid and solid leasable minerals, and travel management would be the same as for Alternative C. Decisions unique to Alternative E would be the closure of the ACEC to locatable minerals. These prescriptions would benefit and protect resources important for subsistence uses in the ACEC.

Additionally, RCAs within and outside the ACEC, would be closed to locatable and leasable minerals, further benefiting subsistence resources and uses throughout the subunit.

4.6.4.4.7. Cumulative Effects

The cumulative effects of past, present and future actions in the Upper Black River Subunit are not likely to impact subsistence resource or uses over the life of the plan. The remoteness of the area, lack of overland access and costs of developing resources, other than those that would be used by local residents in or adjacent to the subunit, render it unlikely that locatable or salable minerals or commercial forest resources sales would occur during the life of this plan. Rights-of-way development would be driven by resource development and therefore would not be expected during the life of the plan. No proposed exploration, development, access or other rights-of-way are currently under consideration on BLM-managed or adjacent lands in the subunit. No new proposals, other than perhaps oil and gas seismic exploration in the Circle area, would be expected. Further discussion of the cumulative case within the subunit is in section J.2.3.5 Appendix J, *ANILCA Section 810 Analysis*.

4.7. Impacts Specific to the White Mountains Subunit

4.7.1. Resources

4.7.1.1. Cultural and Paleontological Resources White Mountains Subunit

Summary of Effects

See section 4.3.1.3 Effects Common to All Alternatives, Impacts Common to All Subunits. For impacts from leasing of locatable minerals see Appendix M.

4.7.1.1.1. Alternative A (No Action)

Effects from Lands and Realty

Two transportation corridors were established in the White Mountains NRA to allow access to potential minerals deposits. All rights-of-way will, as far as possible, be located in one of these corridors. Outside of the NRA, rights-of-way are considered anywhere, although existing trails and roads will be followed to the extent possible. In the White Mountains Subunit, this is primarily limited to federal mining claims near Livengood.

The approval of new roads or trails either within or outside of these transportation corridors, as with all such surface-disturbing activities, would have the potential to directly and adversely impact cultural and paleontological resources. In addition, there could be an indirect effect on surficial cultural resources; with the creation of new routes of access, more resource use permittees would have access to BLM-managed lands which were previously inaccessible. There would be an increased potential of more people finding surface cultural resources and potentially adversely impacting them, either intentionally or unintentionally.

Effects from Locatable Minerals

The entire White Mountains Subunit (including Beaver Creek WSR) of 1,020,000 acres is currently closed to new locatable mineral entry and mineral leasing. There are 4,000 acres of valid existing federal claims inside the subunit but outside of the White Mountains NRA, with mining presently occurring on some of these claims.

Most, if not all, locatable mineral mining that presently occurs is surface-disturbing, open-air mining, and not underground mining which is accessible through shafts and adits that would otherwise leave the upper ground surface undisturbed. As such, locatable mineral mining does directly and adversely impact all manner of cultural and paleontological resources.

Three types of placer mining operations occur or could occur in the subunit: (1) suction dredge operations, where the only surface disturbance relates to the supporting camp, (2) small-scale placer mines, where disturbance is limited to less than five acres per operation, with an assumed total area of 20 to 30 acres for the life of each mine, and (3) large-scale placer mines, where disturbance is estimated at five to twenty acres per operation, with an assumed total area of 60 to 80 acres for the life of each mine.

Further assumptions for locatable minerals for Alternative A in the White Mountains Subunit indicate no suction dredge operations in any given year, three small-scale placer mines, and one

large-scale mine, all of which would occur outside of the White Mountains NRA. This equates to about 120 to 170 acres of disturbed ground, in areas that very likely contain evidence of prior, historic mining operations, which have occurred in some drainages in this subunit for at least 100 years. All of this disturbance would occur outside of the White Mountains NRA proper, because there are no longer any valid federal mining claims in the NRA and this area is closed to new claims. Disturbance to prehistoric sites by any particular operation would have to be assessed on a case-by-case basis. In sum, locatable mineral mining will likely directly and adversely impact all manner of cultural and paleontological resources in the subunit, but outside of the NRA.

In addition, new access roads often need to be constructed in order to reach mineral claims. The construction of new roads not only has a direct and adverse effect on cultural and paleontological resources, but would also have an indirect effect by providing new access by other users to previously isolated lands. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

Effects from Recreation

At present, a wide range of recreational opportunities are available and/or are authorized in the White Mountains Subunit including: established campgrounds, private and commercial floating in the Beaver Creek WSR, all-season motorized and non-motorized overland travel on 220 miles of established trails, 12 public use cabins, staging areas, and waysides. The BLM currently manages the White Mountains NRA as a SRMA, although it is not officially designated as such in existing plans. Special recreation management areas (SRMA), recreation settings, and recreation management zones are not currently addressed in existing plans, and thus have no effects upon cultural resources.

The construction of infrastructure to support these activities can be ground disturbing, and thus can potentially directly affect cultural and paleontological resources. Also, visitors to the public lands have the potential to inadvertently find surficial cultural and paleontological resources, and thus have the potential to adversely impact such resources, either intentionally or unintentionally.

Effects from Travel Management

The current OHV designation for RNAs in the White Mountains NRA (13,000 acres) is closed for all summer and winter use. Current management for the remainder of the subunit is that summer OHV use of vehicles greater than 1,500 pounds are prohibited without a permit on 563,000 acres, but are allowed on 440,000 acres. The remaining 4,000 acres are in the Livengood area and are currently undesignated to OHV use.

Winter snowmachine use is currently allowed on 1,003,000 acres of the White Mountains NRA (excepting the RNAs), but are limited to 1,500 pounds. There are 117 miles of BLM-built and managed winter trails in the White Mountains NRA north of the Beaver Creek WSR, all of which are closed to summer use. The use of UTVs is currently not allowed on any trails. These uses have little to no direct effects upon cultural and paleontological resources.

The use of airboats and hovercraft within the White Mountains NRA, including Beaver Creek WSR, is currently not allowed. Motorboat use is allowed under specific regulations, primarily limiting the size of the motor to 15 horsepower. Use of watercraft has minimal direct impact on cultural and paleontological resources. Use of watercraft has the potential for indirect impacts on these resources by providing access to otherwise inaccessible lands. With river access, there is an

increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

The BLM assumes ever increasing travel visitation and use, both motorized and non-motorized, on the land it manages in the White Mountains Subunit, with OHV use accounting for much of travel-related activities. The current visitation rate of increase is approximately five percent per year, which is expected to continue for the life of the plan. At this rate, travel visitation in the subunit is expected to double within the next 15 years. Additional trails and mechanisms for managing these trails are needed. Construction of new trails, whether authorized or not, like any other surface-disturbing activities, have the potential to directly and adversely affect cultural and paleontological resources.

The construction of new trails also has an indirect effect by providing new access to previously isolated lands. With more resource users accessing BLM-managed lands, there would be an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.7.1.1.2. Alternative B

Effects from Lands and Realty

Alternative B would have the same direct and indirect effects as Alternative A, relative to the construction of new trails in the White Mountains NRA, new access to mining claims in the Livengood area, and land tenure decisions. Only the Nome Creek transportation corridor would be retained. However, since few rights-of-way other than those associated with BLM's development of recreational facilities are anticipated, the reduction to one designated corridor per se is not expected to result in any additional effects to cultural or paleontological resources. This alternative also considers acquiring private land in-holdings from willing sellers. The effect of acquiring this property would be that cultural resources on the previously private parcels (166 acres) would be protected under federal laws.

Effects from Locatable Minerals

Same as Alternative A, but with the added provision that the entire White Mountains Subunit (1,020,000 acres) would be closed to future locatable mineral entry (Map 32).

Effects from Recreation

A wide range of recreational opportunities would be available and/or authorized under Alternative B, in which the White Mountains Subunit is divided into the SRMA (1,016,000 acres) and about 4,000 acres of undesignated land near Livengood. The White Mountains SRMA includes the White Mountains NRA, the Beaver Creek WSR, and associated staging areas and recreation sites. The SRMA would be divided into seven Recreation Management Zones (RMZs), each with a well defined "setting character," ranging from Primitive, to Semi-Primitive, to Backcountry, to Middlecountry, to Frontcountry. The recreation management objectives associated with each of these RMZs are well defined, with differing emphases on building and maintaining facilities and trail, to varying permissible OHV uses.

Construction of public and administrative facilities by the BLM to meet recreational demand can directly and adversely impact surface and subsurface cultural and paleontological resources. The BLM assumes a ten to fifteen percent increase over the life of the plan in demand for recreational

users and visitation (both motorized and non-motorized), resource damage, and user-resource conflicts. Any increased visitation to the public lands has a concurrent potential increase for inadvertently finding surficial cultural and paleontological resources and adversely impacting such resources, either intentionally or unintentionally.

Effects from Travel Management

Under Alternative B, OHV use in RNAs in the White Mountains NRA (13,000 acres) would remain closed for all summer and winter use. For the remainder of the subunit, summer use of OHVs greater than 1,000 pounds are prohibited on 635,000 acres, allowed on only designated trails on 368,000 acres, and allowed cross country with a 1,000 pound weight limit on 4,000 acres (largely in the Livengood area).

Winter snowmachine use would be allowed on 1,007,000 acres of the subunit with a weight limit of 1,000 pounds, excepting only the RNAs which remain closed. The 117 miles of BLM-built and managed winter trails in the White Mountains NRA north of the Beaver Creek WSR would remain closed to summer use. The use of UTVs would continue to be prohibited on the trail system. These uses have little to no direct effects upon cultural and paleontological resources.

The use of airboats, hovercraft, and personal motorized vehicles would be prohibited within the proposed White Mountains SRMA, which includes the Beaver Creek WSR. Motorboat use would remain the same as in Alternative A, along with any direct and indirect effects upon cultural and paleontological resources.

Effects from increasing visitation rates and construction of new trails would be the same as Alternative A.

4.7.1.1.3. Alternative C

Effects from Lands and Realty

Alternative C would have the same direct and indirect effects as Alternatives A and B, relative to the construction of new trails in the White Mountains NRA, new access to mining claims in the Livengood area, and land tenure decisions. Alternative C would be the same as Alternative B, except no transportation corridors would be designated. However, since few rights-of-way other than those associated with BLM's development of recreational facilities are anticipated, the lack of designated corridors per se is not expected to result in any additional effects to cultural or paleontological resources.

Effects from Locatable Minerals

Same as Alternative B.

Effects from Recreation

Alternative C is overall very similar to Alternative B, except there are more acres in Middlecountry and Backcountry RMZs and less acres in Semi-Primitive RMZ. There would be a concomitant rise in potential adverse effects on cultural and paleontological resources under Alternative C because more ground-disturbing recreational infrastructural development would be permitted.

Effects from Travel Management

Under Alternative C, OHV use in RNAs in the White Mountains NRA (13,000 acres) would remain closed for all summer and winter use. For the remainder of the subunit, summer use of OHVs greater than 1,000 pounds are prohibited on 567,000 acres, allowed on only designated trails on 436,000 acres, and allowed cross country with a 1,000 pound weight limit on 4,000 acres (largely in the Livengood area).

Winter snowmachine use would be allowed on 1,007,000 acres of the subunit with a weight limit of 1,000 pounds, excepting only the RNAs which remain closed. The 117 miles of BLM-built and managed winter trails in the White Mountains NRA north of the Beaver Creek WSR would remain closed to summer use. The use of UTVs would be allowed on 27 miles of the trail system south of the Beaver Creek WSR. These uses have little to no direct effects upon cultural and paleontological resources.

The use of airboats, hovercraft, personal motorized vehicles, and motorboats use would be the same as in Alternative B, along with any effects upon cultural and paleontological resources.

Effects from increasing visitation rates and construction of new trails would be the same as Alternative A.

4.7.1.1.4. Alternative D

Effects from Lands and Realty

Same as Alternative C, except the 200-acre recreation withdrawal at Perhaps Creek would be revoked, allowing it to be conveyed to the state. This change would slightly increase the potential of impacts to any cultural and paleontological resources present on this specific site, as surface-disturbing development activities could be more likely to occur.

Effects from Locatable Minerals

Same as Alternative A, but with the added provision that this alternative would open 160,000 acres of land in the White Mountains NRA for leasing of hardrock minerals. This acreage includes placer gold ground deemed of high and medium developmental potential, as well as acres of land with known deposits of rare earth elements. Alternative D has many more acres opened to potential mineral activity than Alternatives A, B, C, and E, and thus would have greater potential adverse impacts to cultural and paleontological resources.

Effects from Recreation

Effects would be essentially the same as Alternative C, except there would be even more acres managed for Middlecountry and Backcountry settings and fewer acres in Semi-Primitive settings in Alternative D, with a concomitant increased potential for adverse impacts to cultural and paleontological resources. There may be a greater emphasis on construction of BLM facilities and trails, resulting in a slightly increased potential for adverse effects to cultural and paleontological resources.

Effects from Travel Management.

Under Alternative D, OHV use in RNAs in the White Mountains NRA (13,000 acres) would remain closed for all summer and winter use. For the remainder of the subunit, summer use of OHVs greater than 1,000 pounds are prohibited on 513,000 acres, allowed on only designated

trails on 31,000 acres, and allowed cross country with a 1,000 pound weight limit on the remaining 459,000 acres.

Winter snowmachine use would be allowed on 1,007,000 acres of the subunit with a weight limit of 1,000 pounds, excepting only the RNAs which remain closed. The 117 miles of BLM-built and managed winter trails in the White Mountains NRA north of the Beaver Creek WSR would remain closed to summer use. The use of UTVs would be allowed on 112 miles of the trail system south of the Beaver Creek WSR. These uses have little to no direct effects upon cultural and paleontological resources.

The use of airboats, hovercraft, personal motorized vehicles, and motorboats use would be the same as in Alternative B, along with any effects upon cultural and paleontological resources.

Effects from increasing visitation rates and construction of new trails would be the same as Alternative A.

4.7.1.1.5. Alternative E

Effects from Lands and Realty

Same as Alternative D.

Effects from Locatable Minerals

Same as Alternative B.

Effects from Recreation

Same as Alternative C.

Effects from Travel Management.

A Travel Management Plan would be developed for the White Mountains Subunit after approval of the RMP. Until that time, interim management would remain largely the same as Alternative A, with a few exceptions: opening up the RNAs (13,000 acres) to winter motorized use; opening up 27 miles of trails south of the Beaver Creek WSR to UTV travel; and allowing the use of airboats, hovercraft, and personal motorized vehicles in the subunit.

These new exceptions to current management practices would not directly affect cultural and paleontological resources, except to potentially increase the indirect effects on cultural resources by providing more access to otherwise previously inaccessible lands. With access, there is an increased potential of more people finding surface cultural resources and adversely impacting them, either intentionally or unintentionally.

4.7.1.2. Fish and Aquatic Species White Mountains Subunit

Summary of Effects

Fish and aquatic resources would be primarily affected by surface-disturbing activities (such as trail construction) which alter stream channels, remove or damage riparian vegetation, or result in soil erosion and sedimentation to fish and aquatic habitat. The level of impact would depend on the success and adequacy of protective measures, but would generally be minor under all

alternatives, as trails would be designed to avoid impacting aquatic habitat and the entire subunit would be closed to locatable mineral entry.

Table 4.19. Stream Miles and Acres Open to Locatable Mineral Entry, White Mountains Subunit

WHITE MOUNTAINS SUBUNIT (BLM-managed lands)	ALTERNATIVES				
	A	B	C	D	E
Stream miles	1,723	1,723	1,723	1,723	1,723
Stream miles open to locatables (proposed)	0	0	0	0	0
Stream miles open to locatables (proposed) plus miles within current valid federal claims	10	10	10	10	10
Stream miles within RCAs in areas open to locatables (proposed)	N/A	0	0	0	0
Stream miles outside RCAs in areas open to locatables (proposed)	N/A	0	0	0	10
Acres open to locatables (proposed)	0	0	0	160,000 (leasing)	3,500
Acres open to locatables (proposed) plus miles within current valid federal claims	3,500	3,500	3,500	3,500	3,500
Anticipated stream gravel disturbance by suction dredging during life of plan measured in cubic yards measured in cubic yards	0	0	0	0	0
Potential impacts to fish and aquatic habitat would be the greatest under Alternative D					

4.7.1.2.1. Alternative A (No Action)

Effects from Leasable Minerals

No lands within the White Mountains Subunit are open to leasing of either fluid minerals (oil and gas) or solid minerals (coal). There are no existing mineral leases. Under this alternative, impacts to fisheries and aquatic resources would be non-existent.

Effects from Locatable Minerals

The White Mountains Subunit is withdrawn from new locatable mineral entry. Mining is occurring on valid existing mining claims (3,500 acres), which are primarily located near Livengood. Beaver Creek, which contains the highest value fishery resources in the subunit, is closed to mineral entry within one-half mile of both banks under ANILCA. Since the majority of the subunit is closed to locatable mineral entry, especially areas containing high-value fish and aquatic habitat, impacts to fish and aquatic habitats are expected to be minimal under this alternative.

Effects from Recreation Management

This subunit receives a high level of recreational use and recreation management is focused on the White Mountains NRA and Beaver Creek WSR. There are set recreation objectives and varying levels of allowable recreational activities within the subunit, based on existing management units. Beaver and Nome Creek receive the greatest amount of fishing pressure due to good access and the high-value grayling fisheries found there. Recreation management on Nome and Beaver Creeks is virtually the same for all alternatives. Some off-trail motorized use is allowed under this

alternative having the potential to impact fish and aquatic habitat. Impacts to fish and aquatic habitat are expected to be minimal under Alternative A.

Effects from Travel Management

The current OHV designation for the White Mountains NRA is “Limited” and allows cross-country travel with OHVs weighing 1,500 pounds and less during summer months on forty-four percent of the subunit. Areas closed to OHV travel during summer months, include the Beaver Creek WSR Corridor, RNAs, and the Primitive Management Unit, which comprise fifty-five percent of the subunit. Prohibiting summer use of OHVs within the Beaver Creek WSR Corridor offers protection to the high-value fishery resources found there. Some trails are managed as non-motorized recreation trails and are generally closed to motorized use. Unmanaged trail proliferation would continue with no guidance for proper construction and placement of new trails. Given the assumption of increased OHV use during the life of the plan, the unauthorized and unmanaged proliferation of trails is also likely to increase under this alternative with a resulting increase in erosion and sediment impacts. Currently, there are no known impacts to fish and aquatic habitat from OHV use, but this could change with the trend of increasing use. Impacts to fish and aquatic habitat should be minimized with the protection of the OHV monitoring plan, which closes or restricts areas open to OHV use if resource damage such as erosion, sedimentation, and water pollution occurs.

Effects from Special Designations

There are three RNAs in this subunit: Limestone Jags (5,170 acres), Serpentine Slide (4,274 acres), and Mount Prindle (3,147 acres). These RNAs are closed to mineral location and leasing and no surface-disturbing activities are allowed, except permitted research projects. Fish and aquatic habitats benefit from those closures and restrictions because the habitat generally remains intact. Although fish and aquatic habitat resources are relatively low within these headwater RNAs, the protections provided ensure these headwater areas remain intact reducing potential impacts to fish and aquatic habitat lower in the drainage.

The Beaver Creek WSR contains high-value fishery resources, including Beaver Creek Chinook salmon which are currently on the BLM Alaska Watch List. The river corridor is withdrawn from mineral leasing and location. Fish and aquatic habitats benefit in areas closed to mineral entry, because the habitat generally remains intact, reducing potential for future impacts on fish and aquatic habitat.

4.7.1.2.2. Alternative B

Effects from Leasable Minerals

Although Alternative B would open BLM split-estate to mineral leasing, the effects would essentially be the same as Alternative A due to the extremely limited amount of split-estate lands in the subunit (100 acres) and lack of potential for leasable minerals.

Effects from Locatable Minerals

Impacts to fish and aquatic habitats would be the same as Alternative A.

Effects from Recreation Management

In Alternatives B, C, D, and E, the White Mountains SRMA is established. The size (just over one million acres) and boundaries of the SRMA remain the same for Alternatives B, C, D, and E, but the number and size of the different management zones within the SRMA varies between alternatives. Alternative B has the greatest number of acres in Primitive and Semi-Primitive management zones, which provide greater protection to fish and aquatic habitat than other zones. Alternative B would provide the most protection to fish and aquatic habitat. Impacts to fish and aquatic habitat are expected to be minimal and localized under Alternative B.

Effects from Travel Management

Under Alternative B, the OHV designation would be Limited and summer use of OHVs weighing 1,000 pounds curb weight and less would be limited to designated trails on thirty-six percent of the subunit. Approximately sixty-one percent of the subunit would be closed to OHV travel in summer months, including the Beaver Creek WSR Corridor, RNAs, and Primitive, Semi-Primitive, and Backcountry RMZs. Proliferation of user made trails should be significantly reduced because OHVs would be restricted to designated trails. However, without adequate enforcement user made trails may continue and possibly increase as OHV use increases. Impacts are expected to be minimal. Alternative B would provide the greatest protection to fish and aquatic habitat when compared to Alternatives A, C, D, and E.

Effects from Special Designations

In addition to effects discussed under Alternative A of this subsection, Alternative B recommends 23 miles of Fossil Creek as suitable for designation in the National Wild and Scenic Rivers System. Fossil Creek is likely to support Arctic grayling and whitefish species. Fish and aquatic habitats are not likely to benefit from Wild and Scenic River designations, because development is limited and the rivers are closed to new mineral entry and leasing. Alternative B would provide the greatest protection to fish and aquatic habitat when compared to Alternatives A, C, D and E.

4.7.1.2.3. Alternative C

Effects from Leasable Minerals

The effects would be the same as Alternative B.

Effects from Locatable Minerals

Impacts to fish and aquatic habitats would be the same as Alternative A.

Effects from Recreation Management

Alternative C has more acres of land in Backcountry and Middlecountry RMZs and therefore less land in Semi-Primitive Zones, compared to Alternative B. Middlecountry Zones provide less protection to fish and aquatic habitat than do Primitive and Semi-Primitive Zones. This alternative allows for increased development of visitor facilities, landscape modifications, and group size. Alternative C has more potential to effect fish and aquatic habitat than Alternative B, less than Alternatives A and D, and the same as E. However, effects from recreation would likely be minimal and easily mitigated with best management practices.

Effects from Travel Management

Similar to Alternative B, summer use of OHVs weighing 1,000 pounds curb weight and less would be limited to designated trails on forty-three percent of the subunit. Approximately fifty-four percent of the subunit would be closed to summer OHV travel, including the Beaver Creek WSR Corridor, RNAs, and Primitive, Semi-Primitive and Backcountry RMZ. However, this alternative allows off-trail use for the retrieval of big game and allows the use of larger UTVs on 27 miles of designated trails. Alternative C provides slightly less protection to fish and aquatic habitat than Alternative B, but more than Alternative A, D, and E. Impacts to fish and aquatic habitat are expected to be minimal.

Effects from Special Designations

The effects would be the same as Alternative A.

4.7.1.2.4. Alternative D

Effects from Leasable Minerals

Alternative D would open 451,000 acres to leasable minerals. There is no potential for solid leasable and limited potential for oil and gas. Industry has shown no interest in leasing development in the White Mountains Subunit. If leasing occurred, further NEPA analysis would be required. Since there is limited potential, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or non-existent.

Effects from Locatable Minerals

Alternative D would open 160,00 (149,000 gold, 11,000 rare earth) acres to the leasing of locatable minerals in the Beaver Creek National Wild and Scenic River drainage. The Standard Operating Procedures (SOPs) and Leasing Stipulations in Appendix A of this document would apply to hardrock mineral leasing and exploration licenses. Additional reclamation requirements similar to those required in riparian conservation areas would also apply. A hardrock mineral leasing program would result in an increased number of placer mining operations with the potential to adversely affect fish and aquatic resources, including BLM Alaska watch list species and the outstandingly remarkable fisheries value for Beaver Creek. A major goal for the NRA is to protect and maintain the water quality of Beaver Creek to meet state water quality standards and promote a quality fishing experience (BLM 1986b). Mechanized placer mining within the floodplain and/or stream channels of Beaver Creek's principal tributaries would not maintain or enhance fish habitat and populations or water quality. The White Mountains NRA Record of Decision and Resource Management Plan (BLM 1986b) states that "Extensive placer mining on Beaver Creek or its principal tributaries would be in conflict with recreational purposes because of degradation to natural and primitive values of the Beaver Creek WSR corridor and damage to Arctic grayling habitat". If mining did occur within or adjacent to streams, the impacts to fish and aquatic resources would be moderate and long term (10–20 years).

Alternative D is the only Alternative that would allow large-scale surface disturbing activities (mining) within or adjacent to streams and as such poses the greatest threat to fish and aquatic resources.

Effects from Recreation Management

Alternative D has the greatest number of acres in Backcountry and Middlecountry RMZs and therefore the least number of acres in the more protective Primitive and Semi-Primitive Zones. This alternative allows for the greatest increase in development of visitor facilities, landscape modifications, and group size. Alternative D has more potential to effect fish and aquatic habitat than Alternatives B, C, and E, and would have similar effects as Alternative A. However, effects from recreation would likely be minimal and easily mitigated with best management practices.

Effects from Travel Management

Similar to Alternative A, summer cross-country use of OHVs weighing 1,000 pounds curb weight and less would be allowed on forty-six percent of the subunit. Approximately fifty percent of the subunit would be closed to summer OHV travel, including the Beaver Creek WSR Corridor, RNAs, and Semi-Primitive and Backcountry RMZs. Unmanaged trail proliferation would continue with no guidance for proper construction and placement of new trails. Given the assumption of increased OHV use during the life of the plan, the unauthorized and unmanaged proliferation of trails may also increase under this alternative with the potential for increased erosion and sediment impacts. This alternative would also allow the use of the larger UTVs on 112 miles of trail. OHVs would be restricted to designated trails in the Nome Creek Valley to protect visual and other resource damage in this high use area. This alternative has more potential to effect fish and aquatic habitat than Alternatives B, C and E, and would have similar effects as Alternative A. Impacts to fish and aquatic habitat would be minimized with the protection of the OHV monitoring plan, which closes or restricts areas open to OHV use if resource damage such as erosion, sedimentation, and water pollution occurs.

Effects from Special Designations

Same as Alternative A.

4.7.1.2.5. Alternative E (Proposed RMP)

Effects from Leasable Minerals

This Alternative would open 3,500 acres in the Livengood Area to leasing with standard terms and operating procedures. There is no potential for solid leasable and limited potential for oil and gas. Industry has shown no interest in leasing development in the White Mountains Subunit. If leasing occurred, further NEPA analysis would be required. Since there is limited potential, it is assumed that seismic surveys would not occur. Given those assumptions, impacts to fisheries and aquatic habitat would be minimal or non-existent.

Effects from Locatable Minerals

This Alternative would open 3,500 acres in the Livengood area to locatable mineral entry. As previously mentioned, mining already occurs on these 3,500 acres, however opening this area to new mineral entry would allow the existing “grandfathered” claims to be transferred to new owners. The impacts to fish and aquatic resources would be minimal and similar to Alternative A.

Effects from Recreation Management

Same as Alternative C.

Effects from Travel Management

This Alternative proposes interim management similar to Alternative A until travel management plans can be completed. Alternative E is the only Alternative that would allow airboats and hovercraft within the White Mountains SRMA. Those types of transportation would likely occur on Beaver Creek, but are not likely to adversely impact fish and aquatic resources. This Alternative removes winter OHV restrictions in the RNAs. Winter OHV use in the RNAs would not effect fish and aquatic resources. Impacts to fish and aquatic habitat would be minimized with the protection of the OHV monitoring plan, which closes or restricts areas open to OHV use if resource damage such as erosion, sedimentation, and water pollution occurs.

Effects from Special Designations

The effects would be similar to Alternative A.

4.7.1.3. Invasive Species White Mountains Subunit

Summary of Effects

Travel management, rights-of-way, and recreation would likely to have the greatest impacts on nonnative invasive species (invasive species) in the subunit. Disturbances are the primary cause of impacts to invasive species, particularly nonnative invasive plants.

Alternative B would result in the least impacts. This alternative provides the greatest opportunities to prevent the introduction and spread of invasive species, particularly plant species, because the least amount of ground disturbing and travel activities would occur. Alternatives A and D would provide the least opportunities of the alternative to prevent establishment of invasive species.

4.7.1.3.1. Effects Common to All Alternatives

In addition to effects discussed as common to all subunits in section 4.3.1.5.1, the following effects would occur in the White Mountains Subunit.

Effects from Forest and Woodland Products

Management decisions for forest and woodland products vary somewhat over the five alternatives in the White Mountains Subunit. Alternatives A and B would best protect against introduction and spread of invasive species, as commercial use of timber and forest products are not allowed on ninety-eight percent of the subunit. Alternatives C and D only prohibit commercial use of timber in the Beaver Creek WSR Corridor (69,000 acres) and the RNAs (12,600 acres). However, restrictions on commercial uses of timber and forest products under Alternatives A and B, would have a limited beneficial effect for the following reasons. Timber within the subunit is not considered marketable due to the remote location of stands of suitable trees from access to milling and markets. Biomass harvest could shift the economics over the life of the plan to result in commercial harvest of wood. Measures to mitigate the impacts of these actions on invasive species and resources would be attached as stipulations to the authorizing documents for the use of timber and forest products. Most timber operations would be restricted to winter operations, which would result in minimal soil disturbance and reduced potential for introduction of invasive plants. Monitoring and EDRR efforts conducted at sites disturbed by harvest of timber and forest products would mitigate impacts as well. Based on historic demand and use, lack of high-value timber, and limited access, minimal impacts to the introduction and spread of invasive species would be expected from resource use of forest and woodland products under any alternative.

The proposed alternative (Alternative E) would allow for the opportunity for commercial timber sales on about 55 percent of the White Mountains NRA. Impacts would be mitigated by restricting operations to winter. The commercial use of forest products would be allowed on all lands managed by BLM in the subunit. Forest product would be occasional and have a small footprint. Stipulations to mitigate impacts from these operations would be attached to permits for this use.

Effects from Leasable Minerals

All BLM lands in the White Mountain Subunit are currently withdrawn from fluid and solid leasable minerals and there are no existing leases. Alternatives B and C would be closed to leasable minerals, except for opening 100 acres of split-estate lands. Alternative E would be closed to leasable minerals in the White Mountains NRA but open on lands near Livengood. Alternative D would open forty-four percent (451,000 acres) in the Foothills Middlecountry RMZ to leasable minerals. The decisions to open some lands to leasing under Alternatives B, C and E would have little effect due to the low development potential for leasable minerals within the subunit. Any exploration that might be proposed would require a permit and impacts would be mitigated through permit stipulations. Nominations for lease sales would be analyzed under a new NEPA document. No exploration or development is anticipated under any alternative due to the lack of development potential. No impacts to invasive species would occur.

Effects from Locatable Minerals

Activity is limited to 4,000 acres of valid existing claims in the Livengood area many of which have been actively mined for decades. Land disturbance from mining typically creates suitable conditions for nonnative invasive plant (invasive plant) species to become established. Invasive plants are able to germinate in the marginal conditions, suppressing native vegetation from becoming established. Each operation must comply with BLM's reclamation standards, which minimize the impacts to invasive plants. Land disturbance from mining typically creates suitable conditions for invasive plant species to become established because removal of over burden often results in a gravelly substrate with little or no fines. This substrate does not hold moisture and many invasive plant species can tolerate these arid conditions and become established. Monitoring and EDRR efforts would further reduce the potential for invasive plants to become established. The remaining lands in the subunit would be closed to locatable mineral entry under all alternatives and no new impacts to invasive plants would be likely to occur from decisions on locatable minerals.

Analysis of leasing locatable minerals under Alternative D is analyzed in Appendix M.

Effects from Recreation

Management of recreation areas through recreation setting character (RSC) classes largely set the stage for the level of protection or development afforded an area. The size and location of RMZs, and therefore RSC settings, change with each alternative and are reflected in the decisions for travel management and related activities. Impacts to invasive species are discussed under these other resource uses.

Effects from Travel Management

The White Mountains Travel Management Plan decisions vary widely across the four alternatives. The range of allowed uses includes non-motorized access only, size and weight limits of motorized vehicles, winter cross-country, designated trails, summer cross-country, permits for

other uses and combinations of each. Roads and trails are prime habitat for invasive plants and vehicles (including boats and airplanes) are vectors for the introduction and spread of invasive plants. Limitations on OHV use, particularly limiting use to designated trails, would help prevent the introduction of invasive plants and aid EDRR efforts by concentrating use and reducing disturbance to native vegetation. Permitting use would provide opportunities to educate users on the threats to habitats from invasive plants and prevention measures they can take (use and site-specific mitigation).

Airboats, hovercraft and personal watercraft would be prohibited in the White Mountains SRMA under all of the action alternatives, which will significantly reduce disturbance to vegetation along streams and the potential for introduction and spread on invasive plants in the White Mountains subunit.

4.7.1.3.2. Alternative A (No Action)

Effects from Lands and Realty

Acquisition of inholdings within the White Mountains NRA would simplify and promote management of invasive species, resulting in minimal but somewhat beneficial impacts to management of nonnative invasive species (invasive species) resources.

Two transportation corridors are identified in the White Mountains NRA. All rights-of-way would be located within these corridors to the extent possible. Consolidation of rights-of-way within designated corridors would help prevent introduction and spread of invasive plants by reducing the overall disturbance. Monitoring for invasive plants and EDRR efforts would be aided by concentration of rights-of-way. However, rights-of-ways have not been applied for, outside of those for the BLM, for any specific uses or access and are not likely to occur over the life of the plan under any alternative. BLM proposed trails, or any other rights-of-way application, would be analyzed and measures to mitigate impacts would be attached to authorizing permits.

Effects from Salable Minerals

Disposal of salable minerals is allowed on all BLM lands in the subunit and authorized at the project level. Impacts to invasive plants are minimized through permit stipulations.

Material sites are commonly infested with invasive plants species. Moving materials from contaminated sites results in introduction of invasive plants at the project site, which would likely be in or adjacent to BLM lands in the White Mountains Subunit.

Existing material sites are located near the highways, roads or other developments, and close to the site of ultimate use. Demand for gravel and other salable materials in the subunit is predicted to yield additional authorizations over the life of the plan. Development of future sites would likely be concentrated near projects, highways, and roads and be used locally. Although effects would likely be limited, site-specific measures to reduce impacts to invasive plants introduction and spread would be attached to authorizations. Monitoring and EDRR efforts by the BLM and operators/permittees would further reduce the potential for invasive plants to become established.

Effects from Travel Management

Under Alternative A, ninety-nine percent of BLM lands in the subunit are open to winter use of OHV 1,500 pounds GVWR and less without a permit (Map 48). The Primitive Management Unit

(494,000 acres) and Beaver Creek WSR Corridor (69,000 acres) are closed to summer motorized use. In the Semi-Primitive Motorized Management Unit (428,000 acres) cross-country travel with vehicles of 1,500 pounds and less GVWR is allowed. However, a permit is required for the use of OHVs of greater than 1,500 pounds GVWR off a valid right-of-way. The three RNAs are closed to motorized use. These limitations on OHV use, particularly not allowing summer use of OHVs, would help prevent the introduction and spread of invasive plants into some areas. However, Alternative A would have a high potential for the introduction and spread of invasive plants due to the allowance of cross-country summer travel on forty-four percent of the area.

4.7.1.3.3. Alternative B

Effects from Lands and Realty

Impacts from land tenure decisions would be the same as Alternative A.

One transportation corridor would be retained in Alternative B. The White Mountains ACEC, the three RNAs, and the Beaver Creek WSR Corridor would be right-of-way avoidance areas. No adverse impacts to invasive species are expected from these decisions. As discussed under Alternative A, consolidating rights-of-way within designated corridors would help prevent introduction and spread of invasive plants by reducing the overall disturbance and travel throughout the subunit. Monitoring for invasive plants and EDRR efforts would be aided by concentrating transportation uses into a corridor. These beneficial effects would likely be minimal as few rights-of-way are anticipated, other than trails established by the BLM.

Effects from Salable Minerals

Approximately thirty-six percent of lands within the subunit would be open to salable minerals and proposed sales would be authorized at the project level. Demand for gravel and other salable materials is predicted to yield additional authorizations over the life of the plan. Development of future sites, similar to existing sites, would likely be concentrated near projects, highways, and roads and be for use locally. Although fewer acres would be open to salable minerals under Alternative B than under Alternative A, demand is not expected to vary by alternative and effects would essentially be the same as Alternative A.

Effects from Travel Management

Under Alternative B, 4,000 acres would be undesignated recreation area. Cross-country winter and summer use of OHVs 1,500 pounds curb weight and less would be allowed. Use of larger vehicles would be allowed on existing roads.

Non-motorized transportation, including horses and bicycles, would be allowed in all areas. The RNAs (12,600 acres) would be closed to all motorized OHV use. Semi-Primitive and Backcountry RMZs (623,000 acres) would be open to winter use of snowmobiles 1,000 curb weight and less. Within the Middlecountry RMZ (329,000 acres) and Frontcountry RMZ (39,000 acres), cross-country use of snowmobiles would be allowed. Travel by OHVs 50" and less and 1,000 curb weight and less would be limited to designated trails. Use of aircraft would generally be unrestricted (with provisions) in all but the Primitive RMZ. Use of motorized vehicles exceeding the limitations set for each RMZ would require a permit.

This alternative offers the best protection against the introduction and spread of invasive plants. Using designated trails in the summer reduces disturbance from user established trails, which

protects against new pathways for pioneering invasive plants to become established. EDRR would be enhanced by concentration of OHV on trails. Where permits are required, stipulations to reduce the threat of introductions would mitigate the potential for introduction and spread. Other active management, including outreach and education at boat launches, trail heads and targeting float plane pilots, could mitigate impacts. This alternative also has the largest acreage (sixty-one percent) closed to summer OHV use.

4.7.1.3.4. Alternative C

Effects from Lands and Realty

Impacts from land tenure decisions would be the same as Alternative A.

Alternative C differs from B in that no transportation corridors and no right-of-way avoidance areas would be identified. Impacts to invasive species, particularly plants, would potentially increase because rights-of-way could be developed within areas more vulnerable to disturbance, enhancing the potential for invasive plants to establish and spread. Rights-of-way may cross streams, and many invasive plant seeds are readily dispersed by water. Infestations of species such as white sweetclover (*Melilotus officinalis*, formerly *M. alba*) have been documented on sand bars along the Nenana River, spreading from source populations far upstream (Conn et al. 2008). The increased potential for impacts would likely be minimal due to the lack of rights-of-way anticipated and the fact that even if transportation corridors and right-of-way avoidance areas existed, rights-of-way could still be approved outside of these areas.

Effects from Salable Minerals

All but the Beaver Creek WSR Corridor would be open to salable minerals under Alternative C. Although ninety-three percent of the area would be open, impacts would be essentially the same as Alternatives A and B, since demand would not vary by alternative.

Effects from Travel Management

Alternative C differs from Alternative B in the location and size of the RMZs and that off-route travel for game retrieval is allowed in the undesignated recreation areas and all but Semi-Primitive and Backcountry RMZs. Approximately ninety-seven percent of the area is in designations that would allow cross-country winter use of snowmobiles 1,000 curb weight and less. Summer use of OHV 1,000 pounds curb weight and less is limited to designated trails, except for retrieval of game, on forty-three percent of the area.

The potential for introduction and spread of invasive plants species would increase substantially in this alternative compared to Alternative B. Off-route travel for game retrieval would be concentrated during seasons when many of the weeds of concern will be in seed. Many of the OHV will come from outside the area, increasing the likelihood of introducing new invasive plants species to the area. EDRR, outreach and education, and larger scale control efforts would be used to try to mitigate impacts.

4.7.1.3.5. Alternative D

Effects from Lands and Realty

Impacts from land tenure decisions would be the same as Alternative A. Impacts from land use authorizations would be the same as Alternative C.

Effects from Salable Minerals

The entire subunit would be open to salable minerals under Alternative D. Impacts would essentially be the same as Alternatives A, B, and C since demand would not vary by alternative.

Effects from Travel Management

Alternative D differs from Alternative C in the location and size of the RMZs and that cross-country summer use of OHVs (1,000 pounds curb weight and less) would be allowed on 464,000 acres or forty-five percent of the area (undesignated recreation area, Middlecountry and Frontcountry RMZs). Alternative D would have high potential for the introduction and spread of invasive plants. Cross-country summer travel would occur across the seed maturation period of all weeds of concern. Many of the OHV will come from outside the area, increasing the likelihood of introducing species that do not already occur in the area. EDRR, outreach and education, and larger scale control efforts would be used to mitigate impacts. Impacts would be similar to Alternative A.

4.7.1.3.6. Alternative E (Proposed RMP)

Differences between the Alternative C (Draft RMP preferred alternative) and the Alternative E (Proposed RMP) for the White Mountains Subunit include one additional riparian conservation area, allowing fluid and solid leasable mineral development on 4,000 acres, changing RNAs from closed to motorized vehicles to limited to snowmobile use, lifting prohibition on airboats and hovercraft, and deferral of the Travel Management Plans with adoption of the no action alternative (Alternative A) as interim management.

The addition of one RCA and opening of leasable minerals on 4,000 acres near Livengood, would not be expected to create much impact on invasive species management. Impacts would be the same as Alternative C.

Effects from Travel Management

In Alternative E, travel management would be the same as for Alternative A with the following exceptions. Winter motorized use (snowmobiles) would be allowed in RNAs, UTVs would be allowed on designated trails (section 2.10.2.2.2.6 Travel Management), use of airboats and hovercraft would be allowed on Beaver Creek WSR, a 1,000 pound curb weight and 50 inches width limitation on snowmobiles would replace the 1,500 pound GVWR limitation, and a 1,000 pound curb weight and 50 inches width limitation on ATVs would replace the 1,500 pound GVWR limitation. In Alternative A and E 563,000 acres, including Beaver Creek WSR, would be limited to no summer use. Interim management in Alternative E differs from Alternative C in that RMZs open to summer OHV would not be limited to designated trails. Impacts from cross-country use by all users would be expected to increase as described in the assumptions for analysis as population trends are projected to increase and ATV technology continues to advance. While cross-country OHV use would be allowed the potential for introduction and spread of invasive plants would be increased and if allowed over the life of the plan would be expected to result in significant costs to BLM to monitor and control infestations.

Research Natural Areas (RNAs) are established and maintained for the primary purpose of research and education (43 CFR Part 8200). The areas are to be used in a manner that is nondestructive and consistent with the purpose of the RNA. Winter OHV use with adequate snow cover would generally cause limited impact to soils and vegetation. Most of the RNAs are highland areas subject to wind that can result in snow free areas. Invasive plant seed could be harbored on snowmobiles if they have been driven through areas where invasive plants occur and snow cover is below the seed heads. Although it is possible that invasive plants could be introduced from this use, the likelihood of invasive plants becoming established in RNAs from use of snowmobiles would be small.

Motorized watercraft are major vectors for introduction and spread of invasive plants. However, little use of airboats and hovercraft would be expected from the lifting of the prohibition in the Beaver Creek NWR. Launching of boats with motors exceeding 15hp would still be prohibited in the Nome Creek Valley, which would require access to be from the Yukon River and the mouth of Beaver Creek (section 4.2.1.3.8 Travel Management). It would be unlikely that motorized boats would still harbor invasive plant seeds after travelling in this direction onto the WSR in the White Mountains National Recreation Area.

4.7.1.3.7. Cumulative Effects

Cumulative impacts would be similar among the alternatives, but will vary in the extent of effect. Alternative B would contribute least to cumulative effects. Cumulative effects would be greatest under Alternatives A and D, which have fewest restrictions on OHV use, for example. Alternative C would provide a balance of management of invasive species while providing for multiple uses of BLM lands. Alternative E would be similar to Alternative C but with increased opportunity for invasive species to be introduced because cross-county summer OHV use would be allowed off designated trails.

Demand for recreational use in and around the White Mountains NRA is anticipated to increase over the life of the plan as populations in the state increase and as technological advancements in recreation equipment continue to occur. Placer mining is occurring on valid federal mining claims in the Livengood area and state mining claims in the White Mountains Subunit. There would be no increase in federal lands available for mining under any alternative. In addition to potential realty actions and OHV use occurring on state and private lands, similar activities allowed under this plan would increase the potential for invasion and spread of invasive species in the White Mountains Subunit.

Analysis of mining rare earth minerals in Alternative D is in Appendix M, Supplement to the Draft RMP.

4.7.1.4. Soil and Water Resources White Mountains Subunit

Summary of Effects

Effects to soil and water resources come from activities resulting in surface disturbance such as mining, trail construction, or facilities development. Proper management of air quality, soils, vegetation, fish and wildlife would generally protect or enhance visual resources.

Generally, the potential for direct adverse impacts to soil and water resources from new mineral development is the same for all Alternatives except Alternative D. Mining closures would be

retained and no new lands would be made available for the staking of new mining claims or leasing of locatable minerals for Alternatives A through C and E. Alternative D would make locatable minerals available on 160,000 acres in the southeastern portion of the NRA under a leasing program. Concerning potential OHV travel impacts to soil and water resources, Alternative B provides the greatest protection by emphasizing less motorized use in a primitive setting while Alternatives D and E offer more motorized recreation use and include the most acreage for cross-country OHV travel.

Appropriate stipulations and SOPs for soil and water resources would be implemented to ensure that long-term adverse impacts would be minimized or avoided. Additional impacts beyond those discussed under 4.3.1. Impacts Common to All Alternatives, are discussed in the following sections.

4.7.1.4.1. Effects Common to All Alternatives

Effects from Locatable Minerals

The White Mountains Subunit is currently withdrawn from locatable mineral entry and would remain closed to new locatable mineral entry under all alternatives. Approximately 4,000 acres of valid existing claims, outside the White Mountains NRA, predate the withdrawals. Mining is occurring on some of these claims.

Impacts to soil and water resources could occur on existing claims near Livengood in all alternatives. Mine operations utilizing heavy equipment have the potential to adversely impact soil resources and water quality through erosion, unintended discharge of sediment laden water, and subsequent increased downstream turbidity. Depending on the methods used and size of operation, mining operations could impact the natural water quality and flow characteristics of selected river segments. Disturbance to soil and water resources from mining operations would be reduced through SOPs and site-specific analysis of subsequent authorizations.

4.7.1.4.2. Alternative A (No Action)

Effects of Land and Realty Actions

There are two transportation corridors established in the White Mountains NRA. Construction of or continued use of existing trails and roads that occur within these corridors have the potential to adversely impact soil and water resources through surface disturbance activities. Outside of the NRA, there are no designated transportation corridors and rights-of-way are considered in all areas. In the White Mountains Subunit, this is primarily limited to federal mining claims near Livengood.

Effects of Recreation

Recreation management is focused on the White Mountains NRA and Beaver Creek WSR Corridor, which are essentially managed as an SRMA with recreation objectives and varying levels of allowable recreational activities. The construction of infrastructure to support these activities would be ground disturbing, and thus could potentially affect soil and water resources. Nonetheless, past impacts to soil and water resources have been low and future impacts are expected to be minimal under Alternative A.

Effects of Travel Management

Disturbance of soil and water resources is expected to increase because travel visitation in the subunit is expected to increase by ten to fifteen percent over the life of the plan. Activities such as construction of new trails have the potential to adversely impact resources. Also, some off-trail motorized use is allowed having the potential to impact soil resources and water quality. However, past impacts to soil and water resources have been low and future impacts are expected to be minimal under Alternative A.

4.7.1.4.3. Alternative B

Alternative B emphasizes active measures to protect and enhance resource values. It is anticipated that the greatest level of resource protection would occur under this alternative, and consequently, the lowest level of soil and water resource disturbance.

Effects of Land and Realty Actions

Under Alternative B one transportation corridor would concentrate the building of access roads and potentially provide a location for other rights-of-way such as pipelines, transmission lines and associated facilities.

Designation of Serpentine Slide, Limestone Jags, and Mount Prindle RNAs, the White Mountains ACEC, and Beaver Creek WSR Corridor as right-of-way avoidance areas would protect soil and water resources. Activities such as removal of vegetation or construction of facilities associated with rights-of-way would not be allowed.

Effects of Recreation

Under Alternative B, 1,017,000 acres in the White Mountains would be established as a SRMA. Acreage for SRMA would be the same for Alternatives C, and D but the number and area of the various Recreation Management Zones (RMZs) within the SRMA would differ between alternatives (Maps 48, 49, and 50). Compared to other Alternatives, Alternative B would allocate the greatest number of acres to Semi-Primitive (483,000) RMZs. Semi-Primitive RMZs provide protection to soil and water resources because of OHV travel restrictions. Impacts to soil and water resources from recreation management actions under Alternative B are expected to be minimal.

Effects of Travel Management

The Beaver Creek WSR Corridor would remain closed to summer OHV use. The use of OHVs with a curb weight of 1,000 pounds or less would be allowed on designated trails during summer. Cross-country use of snowmobiles could occur in most areas (Maps 48, 49, and 50).

Alternatives B and C would provide the greatest protection to soil and water resources when compared to Alternatives A and D because they would designate the same number of acres (12,600) to Primitive RMZ and RNA, areas are closed to all OHV use, and 13,400 acres in the White Mountains Spine as Primitive RMZ with Limited OHV designation; winter use of snowmobiles allowed. Continued trail maintenance, seasonal travel restrictions, and OHV weight restrictions would reduce the amount of surface disturbance potentially affecting soil and water resources.

4.7.1.4.4. Alternative C

Alternative C emphasizes a moderate level of protection, use, and enhancement of resources and services that would provide a balance between development and protection of resources in the subunit. Anticipated resource development levels, as well as impacts to soil and water resources, would be greater than in Alternative B but less than in Alternative D. In some areas, OHV travel would be excluded to protect sensitive resources.

Effects of Land and Realty Actions

Under Alternative C, no transportation corridors would be identified and no right-of-way avoidance areas would be designated. This would allow for the construction of rights-of-way throughout the subunit, 1,020,000 acres, and could result in disturbance to soil and water resources. However, because of limited resource development opportunities, few rights-of-ways are anticipated within the White Mountains NRA during the life of the plan.

Effects of Recreation

Alternative C would allocate more land to Backcountry (382,000 acres) and Middlecountry (398,000 acres) RMZs and less land in Semi-Primitive (171,000 acres) RMZs compared to Alternative B. Middlecountry Zones provide less protection to soil and water resources than the more restrictive Primitive and Semi-Primitive RMZs. Alternative C allows for increased development of visitor facilities, landscape modifications, and group size. Hence, Alternative C provides less protection of soil and water resources compared to Alternative B, but more protection than Alternatives A and D.

Effects of Travel Management

Alternative C and B would provide the greatest protection to soil and water resources when compared to Alternatives A and D because Alternatives C and B have greater restrictions on OHV use. Alternatives B and C would designate the same number of acres (12,600) to Primitive RMZ and RNA, areas are closed to all OHV use, and 13,400 acres in the White Mountains Spine as Primitive RMZ with Limited OHV designation; winter use of snowmobiles allowed. Proliferation of user made trails should be minimal, because OHVs are restricted to designated trails. Trail maintenance, seasonal travel restrictions and OHV weight and width restrictions would reduce the amount of surface disturbance potentially affecting soil and water resources.

4.7.1.4.5. Alternative D

Effects of Land and Realty Actions

Under Alternative D, the Perhaps Creek portion of PLO 4167 would be revoked. This revocation would allow 200 acres to be transferred out of BLM management and open for development and any associated surface-disturbing activities.

Similar to Alternative C, no transportation corridors or right-of-way avoidance areas would be identified, resulting in potential disturbance to soil and water resources.

Effects of Recreation

Alternative D has the greatest number of acres allocated to Backcountry (445,000) and Middlecountry (452,000) RMZs and therefore the least number of acres in the more protective Primitive and Semi-Primitive RMZs. This alternative allows for the greatest increase in development of visitor facilities, landscape modifications, and group size. Thus, Alternative D has greater potential to impact soil and water resources than Alternatives B and C and would likely have similar effects to Alternative A.

Effects of Travel Management

Alternative D greatly increases the amount of area where OHVs can travel cross-country during the summer and expands the type of vehicles allowed compared to Alternatives B and C. Hence, Alternative D has more potential to adversely impact soil and water resources through soil erosion and stream siltation than Alternatives B and C and would likely have effects similar to Alternative A. Measures to minimize disturbance of soil resources and protect water quality would be developed with site-specific stipulations and SOPs during NEPA analysis of travel management actions.

4.7.1.4.6. Alternative E (Proposed RMP)

Alternative E is intended to provide a mix of land management actions that best satisfies issues and concerns in consideration of all values and programs and adopts a blend of actions that would balance moderate development with protection of the environment.

Effects from Locatable Minerals

Under Alternative E the entire subunit (1,016,000 acres) would remain closed to locatable minerals protecting soil and water resources by limiting surface disturbance. There are 4,000 acres of valid existing federal claims inside the subunit but outside of the White Mountains NRA, with mining presently occurring on some of these claims. Impacts from the mining of locatable minerals are described under section 4.3.1.6. Impacts to soil and water resources would depend on the scale of the action and the number of mineral sites mined. It is anticipated that there could be one large-scale placer mine operation. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from operations would include 60 to 80 acres over the life of this plan. Up to three small-scale placer mine operations are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine for a total of 20 acres of disturbance. Mineral exploration activities with resulting camp and field sampling programs would include surface disturbance of between 6 to 50 acres. Only one exploration operation is anticipated and no suction dredge operations are expected to occur over the life of the plan.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. These Recreation Management Zones provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will fit on the landscape. Alternative E is similar to Alternative C. Both Alternatives have more acres of land in Backcountry and Middlecountry RMZs and less land in Semi-Primitive Zones, compared to Alternative B. Middlecountry Zones provide less protection to soil and water resources than do Primitive and Semi-Primitive Zones. Alternative E allows for increased development of visitor

facilities, landscape modifications, and group size and has greater potential for adverse impacts to soil and water resources than Alternative B, but less than Alternatives A and D.

Effects from Travel Management

A Travel Management Plan would be developed for the White Mountains Subunit after approval of the RMP. Until that time, interim management would remain largely the same as Alternative A, with a few exceptions; opening the RNAs (13,000 acres) to winter motorized use, opening 27 miles of trails south of the Beaver Creek WSR to UTV travel, and allowing the use of airboats, hovercraft, and personal motorized vehicles in the subunit.

Open cross-country travel on BLM lands would be restricted to motorized vehicles of 1,000 pounds curb weight or less and 50 inches in width or less year round. OHV travel may impact soil and water resources primarily by disturbing vegetation and by propagation of user-created trails. Weight restricted travel would help reduce the amount of surface disturbance to vegetation and soils on approximately 1,020,000 acres.

Cross-country travel in Beaver Creek Corridor is limited to winter travel with limited impacts to soil and water resources. Summer use of OHVs within the corridor would not be allowed. Vehicles weighing up to 1,500 pounds curb weight and 64 inches in width or less would be allowed within areas designated for use by UTVs. These areas are a portion of the Wickersham Creek Trail, the Trail Creek Trail, the trail from Mile 23.5 of the Elliott Highway to the Wickersham Creek Trail, the Quartz Creek Trail and the Nome Creek tailings area. Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads only, protecting soil resources by restricting use to already hardened areas.

Effects from Forest and Woodland Products

Under Alternative E, personal use of timber and forest products, as well as commercial timber salvage sales and commercial use forest products would be considered on all BLM-managed lands (1,020,000 acres). Impacts from commercial timber sales (large and small) would be considered on all BLM-managed lands except within the Beaver Creek WSR, RNAs and the White Mountains ACEC. These acres (499,000) would be protected from impacts associated with commercial timber sales. Soil and water resource impacts would depend on the location, size or the area and harvest techniques used, however, surface disturbance associated with harvesting forest products would likely result in adverse erosion and sedimentation impacts in some areas.

4.7.1.5. Visual Resources White Mountains Subunit

Summary of Effects

VRM Classes outline the level of change that could occur within that class. Identifying an area as a specific management class does not guarantee that change will take place. The discussion below identifies the number of acres that may retain or lose visual quality due to management in a specific VRM Class; however, the potential for every acre to lose visual quality due to management in a specific VRM Class is extremely low. The analysis logically assumes that areas designated as VRM Class III and IV would permit more surface-disturbing impacts and potentially have greater adverse impacts on visual resources and scenic quality than those areas designated as VRM Class I and II.

In addition to those impacts discussed under section 4.3.1.9 Impacts Common to all Subunits, the following impacts may occur in the White Mountains Subunit. For the visual resource inventory see Appendix D, *Visual Resource Inventory*.

Alternatives – VRM Management Class Designations		VISUAL RESOURCES INVENTORY CLASS DESIGNATION ^a			
		VRI Class I		VRI Class II	
		71,000	7%	950,000	93%
Alternative A	Acres	Acres	%	Acres	%
VRM I	69,000	69,000	7	227	<1
VRM II	506,000	1,000	<1	505,000	50
VRM III	428,000	57	<1	428,000	43
VRM IV					
Total^b	1,003,000	71,000	7	933,000	92
Alternative B	Acres	Acres	%	Acres	%
VRM I	96,000	70,000	7	25,000	3
VRM II	554,000			554,000	54
VRM III	367,000			367,000	36
VRM IV	4,000			4,000	<1
Total	1,020,000	70,000	7	950,000	93
Alternative C	Acres	Acres	%	Acres	%
VRM I	96,000	70,000	7	25,000	3
VRM II	217,000			217,000	21
VRM III	268,000			268,000	26
VRM IV	440,000			440,000	43
Total	1,020,000	70,000	7	950,000	93
Alternative D	Acres	Acres	%	Acres	%
VRM I	82,000	70,000	7	12,000	1
VRM II	123,000			123,000	12
VRM III	321,000			321,000	31
VRM IV	494,000			494,000	48
Total	1,020,000	70,000	7	950,000	93
Alternative E	Acres	Acres	%	Acres	%
VRM I	96,000	70,000	7	25,000	2
VRM II	883,000	400	<1	882,000	86
VRM III					
VRM IV	42,000			42,000	4
Total	1,020,000	71,000	7	950,000	93

^aNo lands in the White Mountains classed as VRI Class III or IV in the inventory.

^bIn Alternative A, only the White Mountains NRA and Beaver Creek WSR Corridor have assigned VRM Classes.

4.7.1.5.1. Effects Common to All Alternatives

Effects from Cave and Karst

The cave and karst resources are located within the Limestone Jags RNA and are managed under a Primitive recreation setting character classification to preserve scientific integrity. The area is closed to OHV use, mineral entry, and mineral leasing. These management actions help protect the visual resources by maintaining the area in a near natural landscape.

Effects from Cultural and Paleontological Resources

Use of four public use areas (approximately six acres) will continue to impact visual resources from changes in vegetation through the creation of trails and facilities associated with increased use. Changes to line, form, color and texture will result in greater contrast between exposed soils and adjacent vegetation. Temporary camps and human-made facilities will introduce color and straight lines into an already disturbed landscape. Colors from temporary camps will be the greatest impact, but would be short-term, generally lasting only a few nights. Impacts from scientific use are described in section 4.3.1.9 Impacts Common to All Subunits.

Effects from Locatable Minerals

The entire subunit is closed to locatable minerals and this would remain the case under all alternatives. Visual resources would only be impacted by mining on 4,000 acres of valid existing claims in the Livengood area. These impacts would be present in varying degree depending on the number and size of active mining operations and the degree of reclamation on existing disturbed areas. But, would not vary by alternative.

One large-scale placer mine operation is anticipated near Livengood. The operation would have a disturbed annual footprint of 16 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 60 to 80 acres of disturbance. Additionally, up to three small-scale placer mine operations are anticipated. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine which is anticipated to be between 10 to 20 years for a total of 20 to 30 acres of disturbance. Impacts from all three operations would impact between 60 to 90 acres over the life of this plan. Impacts from mining operations are described in section 4.3.1.9 Impacts Common to All Subunits.

The preference of winter cross-country moves associated with mining activities helps protect visual resources by reducing the amount of disturbance to soils and vegetation when the ground is frozen and vegetation is at least partly covered by snow. Some changes to line, form, color and texture still occurs through clearing the route of large woody vegetation in a relatively straight line on an otherwise irregular, multi-hued landscape.

Effects from Travel Management

Trail construction, for non-motorized or motorized use, causes changes in color, line, and texture on the landscape. The destruction of vegetation and the hardening of the travel surface create a contrast between the adjacent greens of natural vegetation and the browns and grays of the soils or travel surface materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques, or soil surface areas. Most trails would attract attention of the casual observer if viewed from a higher observation point and if the trails were located within the Foreground-Middleground and Background zones. Trails that are properly designed and viewed from ground level, however, would not generally attract the attention of a casual observer, except from trailhead observation points.

4.7.1.5.2. Alternative A (No Action)

In addition to impacts discussed as common to all subunits in section 4.3.1.9, the following impacts would occur in the White Mountains Subunit under Alternative A.

Effects from Visual Resources

Under Alternative A, of VRI Class I acres (seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of those lands. These lands, the Beaver Creek WSR Corridor, have an A rating for scenic quality, high sensitivity and occur in the foreground-middle ground zone.

Additionally, of VRI Class II lands (ninety-three percent), less than one percent would be managed as Class I resulting in preservation of the existing visual character of the lands associated with the Beaver Creek WSR Corridor. Approximately fifty percent of VRI Class II land would be managed as VRM Class II allowing a low level of change, while forty-three percent would be managed as VRM Class III, potentially resulting in only partially retention of landscape characteristics. These lands have an A rating for scenic quality, a high sensitivity and occur in both the Foreground-Middleground and Background zones.

No lands classed as VRI Class III or VRI IV during the inventory and no lands would be managed as VRM Class III or VRM Class IV under any alternative.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Water Resources

Management activities such as closing watersheds to OHV use would improve visual resources over long-term as trails are naturally revegetated, covering exposed soil and cleared vegetation regrows. The scope of effects would depend on the size of the closure.

The Water Resources and Riparian Reclamation project along Nome Creek will enhance visual resources by reclaiming past mining activities and returning the stream to one proper functioning channel, on approximately seven miles of the creek. Reducing materials piles and restoring the floodplain will return the site to a more natural landscape in line and form. Natural revegetation will return a more natural line, form, color and texture to the landscape.

Effects from Wildlife

Management activities for wildlife and wildlife habitat generally include restrictions on other resource use such as closing areas to mining, seasonal closures or the use of prescribed fire. Closing areas to certain surface-disturbing activities would improve visual resources by not allowing those activities. Seasonal closures protect visual resources for the duration of the closures. Impacts from prescribed fire would last the longest and are described in section 4.3.1.9. The size and scope would depend on the size of the closures and prescribed fire area.

Effects from Forest and Woodland Products

No commercial timber harvest is permitted under Alternative A, which would protect visual resources on 1,020,000 acres. Personal use of timber is allowed throughout the subunit. Management restrictions may include winter cutting and movement, maintaining a set distance from waterways, and lopping and scattering slash. These management restrictions would help reduce impacts to visual resources. The size and scope of impacts would depend on the size of the area and the harvest techniques used.

Effects from Land and Realty

The two transportation corridors (27,000 acres) would concentrate the building of access roads and possibly provide a location for other ROWs such as pipelines, transmission lines and associated facilities. This consolidation of ROW facilities would help protect visual resources by limiting the locations of surface disturbance and facilities development. If alternative ROWs are necessary, existing trails or travel routes would be used whenever possible. Using existing trails would reduce impacts to visual resources by using already disturbed areas where possible.

Retaining all lands within the White Mountains NRA under BLM management will help protect visual resources by limiting non-BLM actions to current inholdings. Retaining other important lands for recreation purposes helps protect visual resources by evaluating surface-disturbing activities and development on these lands. Retention applies to approximately 1,017,000 acres.

There are three withdrawals under PLO 4176 totaling 505 acres for BLM development as recreation sites. These withdrawals would be maintained, protecting visual resources by keeping these lands under BLM's management.

Effects from Leasable Minerals

The entire subunit, 1,020,000 acres, is closed to both fluid and solid leasable minerals. Visual resources will not be impacted by exploration or development of leasable minerals.

Effects from Salable Minerals

The entire subunit (1,020,000 acres) is open to salable minerals. Impacts from the mining of salable minerals are described under section 4.3.1.9. Visual resources would be protected on a project-specific basis through the use of management class objectives and the visual contrast rating process. While the subunit would be open to salable minerals it is anticipated that demand for material will generally be met from production on state lands and only 100 acres along roads would be mined within this subunit. Mining activities for salable minerals would generally occur along roads due to transportation requirements.

Effects from Recreation

Development within the Beaver Creek WSR Corridor and adjacent viewshed of the river has been minimized. Six winter trails cross Beaver Creek and were designed to retain the existing character of the landscape and to meet VRM Class II objectives. Some human-made features, such as trapping cabins and inholdings are located within the corridor. Many of these facilities are made using natural appearing materials and blend with the surrounding landscape in color. These management activities help protect the visual resources in the corridor (69,000 acres).

The Primitive Management Unit is managed to protect the wild and natural character of the area. Facilities such as motorized trails, non-motorized trails, and public use cabins were constructed of natural appearing materials and blend with the surrounding landscape. These management activities help protect the visual resources on 494,000 acres.

The highlands, consisting of the high ridge complex from Cache Mountain to Lime Peak and Mount Prindle, plus the White Mountains backbone and Victoria Mountain, are managed to protect remote primitive values, including outstanding scenic vistas of high mountain terrain, pristine areas with virtually no evidence of human-made improvements. These management activities help protect the visual resources on 494,000 acres.

The Semi-Primitive Motorized Management Unit has a number of human-made facilities, such as trails, roads, trail-heads, public use cabins, shelters, campgrounds with related facilities and an administrative site. These facilities were constructed as sustainable and to blend with the surrounding landscape characteristics, thus protecting visual resources on 428,000 acres.

Effects from Travel Management

Research Natural Areas are closed to OHV use. This helps protect visual resources by preventing surface disturbance to vegetation and soils from the use of motorized vehicles, on 12,600 acres.

The Beaver Creek WSR Corridor management allows motorized use of OHV weighing 1,500 pounds GVWR and less without permit for winter travel. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. These management activities help protect the visual resources on 69,000 acres. The Windy Creek and Fossil Creek drainages are closed to OHV use from April 15 to August 31. This closure helps protect visual resources by closing these drainages within the river corridor to travel from April 15 until the snow melts along approximately 27 miles.

The Primitive Management Unit (Map 48) allows for motorized use of OHV weighing 1,500 pounds GVWR and less without permit for winter travel. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. These management activities help protect the visual resources on 494,000 acres.

The Semi-Primitive Motorized Unit allows for unrestricted travel by OHVs weighing 1,500 pounds GVWR and less year round. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. These management activities help protect the visual resources on 428,000 acres. However, allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes with impacts to vegetation and soils in line, color and texture. It is anticipated that over the life of the plan, an addition of 200 user-created travel routes may be created. Summer travel routes are typically developed in areas that show changes to line, color and texture with repeated passes.

The Semi-Primitive Motorized Unit also allows for use of vehicles greater than 1,500 pounds GVWR on US Creek Road, along valid ROWs such as roads within the Nome Creek Valley, and approximately 11 miles of tailings along Nome Creek. These areas are hardened and show little change from the existing modified landscape. These management actions impact visual resources on 428,000 acres.

The use of motorized vehicles greater than 1,500 pounds GVWR within the White Mountains NRA and Beaver Creek is allowed by permit. The impacts from this travel would vary depending on the size of vehicle, season of travel, and the number of passes made. Impacts would be similar to those described for cross-country travel under section 4.3.1.9 Impacts Common to All Subunits.

Travel on lands outside the White Mountains NRA and Beaver Creek is unrestricted and may impact visual resources on 4,000 acres by disturbing primarily vegetation by repeated passes and by clearing travel routes.

Effects from Special Designations

Under Alternative A, three areas are designated as RNAs and no surface-disturbing activities are allowed except by permit in association with research projects. The RNAs are closed to OHV, camping, and mineral location and leasing. These management activities will help protect visual resources by limiting surface-disturbing activities in association with permits issued for research projects on 12,600 acres.

The Beaver Creek WSR Corridor is managed to preserve the river and its immediate environment in its natural, primitive condition, in accordance with the Wild and Scenic Rivers Act (P.L. 90542). The designated corridor (69,000 acres) is managed as VRM Class I. No additional rivers are recommended suitable for designation.

4.7.1.5.3. Alternative B

Additional impacts under Alternative B, beyond those discussed as common to all subunits under section 4.3.1.9 are discussed below.

Effects from Fish and Aquatic Species

There are fourteen Riparian Conservation Areas (RCAs) identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 488,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands in Riparian Conservation Areas (67,000 acres) one-hundred percent would be managed under Class I management retaining the natural appearance of the landscape. Of VRI Class II lands in Riparian Conservation Areas, two percent or 6,000 acres would be managed as Class I while sixty-two percent or 263,000 acres would be managed as Class II lands and thirty-six percent (152,000 acres) would be managed as Class III lands allowing some change to the natural landscape. No lands were identified as VRI Class III or IV.

Effects from Visual Resources

Under Alternative B, of VRI Class I acres (seven percent), one-hundred percent (70,000 acres) would continue to be managed as VRM Class I resulting in preservation of the existing visual character of those lands. These lands, the Beaver Creek WSR, have an A rating for scenic quality, high sensitivity and occur in the foreground-middle ground zone.

Additionally, of VRI Class II lands (ninety-three percent or 950,000 acres), approximately three percent (25,000 acres) would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Beaver Creek WSR Corridor. Approximately fifty-four percent (554,000 acres) of VRI Class II land would be managed as VRM Class II allowing a low level of change, while thirty-six percent (367,000 acres) would be managed as VRM Class III, potentially resulting in only partial retention of landscape characteristics. Less than one percent (4,000 acres) would be managed as Class IV lands potentially resulting in a high level of change to the landscape characteristics. These lands have an A rating for scenic quality, a high sensitivity and occur in both the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing

activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative B, wilderness characteristics would be maintained on 509,000 acres (fifty percent), limiting activities that impact the appearance of naturalness.

Of VRI Class I lands where wilderness characteristics will be maintained (70,000 acres) one-hundred percent would be managed under Class I retaining the natural appearance of the landscape. Of VRI Class II lands where wilderness characteristics will be maintained, six percent or 25,000 acres would be managed as Class I while ninety-four percent or 414,000 acres would be managed as Class II lands. No lands where wilderness characteristics will be maintained were identified as VRI Class III or IV lands.

Effects from Wildlife

In addition to the effects discussed under Alternative A, the following effects would occur under Alternative B. If OHV travel impacts wintering caribou by reducing caribou use of an area, then use restrictions or closures may occur. These actions would improve visual resources by restricting or eliminating damage to vegetation and clearing of winter trails. Changes in vegetation, and clearing winter trails and travel routes from OHV use impact visual resources by primarily changing the line, color and texture of the natural landscape.

Effects from Forest and Woodland Products

Personal use of timber, timber salvage sales, commercial timber sales, and commercial use of forest products would not be allowed within the White Mountains SRMA (inclusive of Beaver Creek WSR). Temporary camps and various impacts from different harvest techniques would not impact 1,017,000 acres. These management actions would help protect visual resources.

The rest of the subunit would be open to these uses, potentially impacting visual resources on 4,000 acres. The size and scope of impacts would depend on the size of the area and harvest techniques used.

Effects from Land and Realty

Under Alternative B, the retention of one transportation corridor (7,000 acres) would continue to concentrate the building of access roads and possibly provide a location for other rights-of-way. This consolidation of rights-of-way facilities would help protect visual resources by limiting the locations of surface disturbance and facilities development associated with these activities.

All of the lands within the transportation corridor were identified as VRI Class II lands (7,000 acres) one-hundred percent would be managed as Class III lands allowing some change to the natural landscape.

The designation of Serpentine Slide, Limestone Jags and Mount Prindle RNAs, the White Mountains ACEC, and Beaver Creek WSR Corridor as a right-of-way avoidance areas would

protect visual resources by not allowing clearance of vegetation and construction of structures associated with different kinds of rights-of-ways. A natural landscape in line, form, color and texture would be maintained on 95,000 acres.

Recreation withdrawals under PLO 4176 would be maintained, protecting visual resources by keeping these lands under BLM's management.

Effects from Leasable Minerals

Under Alternative B, approximately 100 acres of split-estate lands would be open to fluid mineral leasing subject to major constraints. The remainder of the subunit would be closed to both solid and fluid leasable minerals. These actions would protect visual resources.

Effects from Salable Minerals

Approximately 649,000 acres would be closed to salable minerals, including the three RNAs, the Primitive RMZ, the Beaver Creek WSR Corridor, the Highlands RMZ, and the Cache Mountain RMZ. Visual resources would not be impacted on these lands. Impacts to visual resources by production of salable mineral resources on the remaining 371,000 acres would depend on the scale of the action and the number of mineral sites. Changes to line, form, color and texture of the natural landscape would result from activities such as trenching, road building for access, vegetation clearing for exploration activities, and mineral extraction processes. Buildings and other facilities would impact primarily line, color and texture.

While thirty-six percent of the subunit is open to salable minerals under Alternative B, it is anticipated that only 100 acres would be material sites would be approved over the life of the plan. Mining activities for salable minerals would generally occur along roads due to transportation requirements. Impacts to visual resources by the development of salable minerals are described under section 4.3.1.9.

Effects from Recreation

Recreation Management Zones (RMZs) are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions include a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and descriptions of how facilities will sit on the landscape.

Of VRI Class I lands (70,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, three percent or 25,000 acres would be managed as Class I while fifty-four percent or 554,000 acres would be managed as Class II lands, thirty-six percent (367,000 acres) would be managed as Class III lands allowing some change to the natural landscape and less than one percent (4,000 acres) would be managed as Class IV lands allowing visual changes to the natural landscape to occur. No lands were identified as VRI Class III or IV.

Under Alternative B: the Beaver Creek WSR Corridor and the Primitive RMZ would have a VRM Class I (96,000 acres); the Semi-Primitive and Backcountry RMZs would have a VRM Class II (554,000 acres); the Middlecountry and Frontcountry RMZs would have a VRM Class III (367,000 acres); and all other lands would have a VRM Class IV (4,000 acres).

Effects from Travel Management

Travel management on other BLM lands outside the SRMA

Open cross-country travel on (4,000 acres) is restricted to winter use of snowmobiles weighing 1,000 pounds curb weight and less, and summer use of OHVs weighing 1,500 pounds curb weight and less. These restrictions may impact visual resources by disturbing vegetation by repeated passes and by clearing of travel routes. Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads. This would protect visual resources by restricting this type of use to already hardened areas. All other vehicle use could be allowed under permit. The impacts larger vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made but would be similar to impacts described for open cross-country travel, except on a larger scale. Impacts to visual resources by open cross-country travel are described in section 4.3.1.9.

Travel Management within the SRMA

Within all zones, restrictions or closures associated with travel may occur to protect resources. These actions would improve visual resources by restricting or eliminating damaged to vegetation and clearing of trails.

Research Natural Areas are closed to OHV use. This helps protect visual resources by preventing surface disturbance to vegetation and soils from the use of motorized vehicles on 12,600 acres. The remainder of the Primitive Zone (13,400 acres) would be closed to summer OHV use, but open to the winter use of snowmobiles.

The **Semi-Primitive Zones** (483,000 acres), which include Beaver Creek WSR Corridor and the White Mountains Highlands, allows cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

The **Backcountry Zone** (140,000 acres) allows cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape even with cross-country travel allowed because of the frozen soils and snow cover on lower growing vegetation. In addition, Windy Creek and Fossil Creek drainages are closed to OHV use from April 15 to August 31. As in Alternative A, this closure helps protect visual resources by closing these drainages to travel from April 15 until the snow melts along approximately 27 miles.

In both the Semi-Primitive and Backcountry zones, the summer use of OHV weighing 1,000 pounds curb weight and less and all use of motorized vehicles greater than 1,000 pounds curb weight may be allowed by permit. The impacts from vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described for cross-country travel except on a larger scale. Stipulations could be attached to permits to reduce impacts.

The **Middlecountry Zone** (329,000 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. These seasonal and weight restrictions help reduce the amount of surface disturbance to vegetation and soils with

resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed on designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails. These management activities help protect the visual resources on 327,000 acres.

The **Frontcountry Zones** (38,500 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. These seasonal and weight restriction help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover.

Summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed on designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails. These management activities help protect the visual resources on 38,000 acres. In addition, the Table Top Mountain trail, the Ski Loop trail and the Summit trail, are limited to non-motorized use only, which helps protect the visual resources along these trails.

A portion of the Wickersham Trail is closed to OHV use from April 15 to June 1. This closure helps protect visual resources by closing this trail to travel until soils are suitable for travel without resource damage. This management action helps protect visual resources on approximately 28,000 acres.

The Frontcountry Zone also allows for use of highway vehicles and OHVs weighing 1,500 pounds curb weight along approximately 11 miles of mining tailings along Nome Creek. These areas are hardened and show little change from the existing modified landscape. These management actions impact visual resources along these travel areas.

In both the Middlecountry and Froncountry zones, the use of larger vehicles off designated trails may be allowed by permit. Visual resources would be protected through the use of management class objectives and the visual contrast rating process when permits are considered.

Effects from Special Designations

Under Alternative B, 589,000 acres would be designated as the White Mountains ACEC to protect caribou and Dall sheep habitat. Management decisions to protect wildlife habitat would help preserve the visual characteristics of the area. For example, seasonal restrictions or closures of areas to motorized use may occur to protect habitat. Seasonal restrictions on activities within a one mile radius of ungulate mineral licks would limit development and use in these areas. The ACEC would be closed to leasable and locatable minerals, and would be a ROW avoidance area. ROW avoidance would protect visual resources by not allowing clearance of vegetation and construction of structures associated with different kinds of rights-of-ways. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 589,000 acres.

Of VRI Class I lands within ACECs (39,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, five percent or 25,000 acres would be managed as Class I while seventy-three percent or 403,000 acres would be managed as Class II lands and twenty-two percent or 121,000 acres would be managed as Class III lands allowing some change to the natural landscape.

Impacts to visual resources from RNAs would be the same as Alternative A.

Under Alternative B, 5,800 acres associated with Fossil Creek would be maintained as a natural landscape under the eligibility as a “scenic” river and would be assigned a VRM Class II to protect the naturalness of the river corridor. “Scenic” rivers are still largely primitive and undeveloped by may contain some development such as roads, trails and minor facilities. Management decisions to preserve these characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform.

4.7.1.5.4. Alternative C

In general, Alternative C anticipates a moderate level of resource protection, use and enhancement of resources and adopts VRM classes that would allow a range of development and still protect visual resource in certain areas. Additional impacts beyond those discussed as common to all subunits under section 4.3.1.9 are discussed below.

Effects from Fish and Aquatic Species

There are 14 RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 444,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands within RCAs (67,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, two percent or 6,000 acres would be managed as Class I while twenty-two percent or 263,000 acres would be managed as Class II lands, eighteen percent (152,000 acres) would be managed as Class III lands allowing some change to the natural landscape and forty-seven percent (177,000 acres) would be managed as Class IV allowing a visible level of change to the landscape. No lands were identified as VRI Class III or IV.

Effects from Visual Resources

Under Alternative C, of VRI Class I lands (seven percent or 70,000 acres), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of those lands. These lands, the Beaver Creek WSR, have an A rating for scenic quality, high sensitivity and occur in the foreground-middle ground zone.

Additionally, of VRI Class II lands (ninety-three percent or 950,000 acres), approximately three percent (25,000 acres) would be managed as Class I resulting in preservation of the existing visual character of these lands associated with the Beaver Creek WSR Corridor. Approximately twenty-three percent (217,000 acres) of VRI Class II land would be managed as VRM Class II allowing a low level of change, while twenty-six percent or 268,000 acres would be managed as Class III lands potentially resulting in only partially retention of landscape characteristics. Additionally, forty-three percent or 440,000 acres of VRI Class II lands would be managed as VRM Class IV potentially resulting in a high level of change to the characteristic landscape.

These lands have an A rating for scenic quality, a high sensitivity and occur in both the Foreground-Middleground and Background Zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities can contribute significantly in reducing impacts to visual resources, regardless of VRM Class.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative C, wilderness characteristics would be maintained on 312,000 acres (thirty-one percent), limiting activities that impact the appearance of naturalness.

Of VRI Class I lands where wilderness characteristics will be maintained (70,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands where wilderness characteristics will be maintained, ten percent or 25,000 acres would be managed as Class I while ninety percent or 217,000 acres would be managed as Class II lands. No lands were identified as VRI Class III or IV lands.

Effects from Wildlife

Same as Alternative B.

Effects from Forest and Woodland Products

Personal use of timber and commercial timber sales would not be allowed within the Beaver Creek WSR Corridor and the RNAs. Temporary camps and various impacts from different harvest techniques would not impact 82,000 acres. Additionally, commercial use of forest products would not be allowed within the RNAs. Temporary camps and various impacts from different harvest techniques would not impact 12,600 acres. These management actions would help protect visual resources.

The rest of the subunit would be open to personal use of timber, and commercial use of both forest products and timber, potentially impacting visual resources on 935,000 acres. The size and scope of impacts would depend on the size of the area and harvest techniques used. Commercial timber sales are unlikely due to lack of access and lack of commercially valuable timber.

Timber salvage sales would be considered throughout the subunit. The size and scope of impacts would depend on the size of the area and harvest techniques used.

Effects from Land and Realty

No transportation corridors or right-of-way avoidance areas would be identified. The concentration of access roads and other rights-of-way may not occur. However, few rights-of-way are anticipated during the life of the plan within the White Mountains NRA.

Effects from retaining PLO 4176 would be the same as Alternative B.

Effects from Leasable Minerals

Under Alternative C, approximately 100 acres of split-estate lands would be open to fluid mineral leasing. The remainder of the subunit would be closed to both solid and fluid leasable minerals. These actions would protect visual resources.

Effects from Salable Minerals

Impacts would be similar to Alternative A, except less land would be opened to salable minerals. Under Alternative C, impacts to visual resources by production of salable mineral resources on 951,000 acres would depend on the scale of the action and the number of mineral sites. While ninety-three percent of the subunit is open to salable minerals it is anticipated that only 100 acres along roads would be mined within this subunit.

The Beaver Creek WSR Corridor (69,000) acres would be closed. Visual resources would not be impacted by mining salable minerals on these lands.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (70,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands three percent (25,000 acres) would be managed as Class I, while twenty-one percent or 217,000 acres would be managed as Class II, twenty-six percent or 268,000 acres would be managed as Class III lands allowing some change to the natural landscape and forty-three percent (440,000) would be managed as Class IV lands allowing visual changes to the natural landscape to occur. No lands were identified as VRI Class III or IV lands.

Under Alternative C: the Beaver Creek WSR Corridor and Primitive RMZs would have a VRM Class I (96,000 acres); the Semi-Primitive RMZ (102,000 acres) would have a VRM Class II; the Backcountry RMZ would have a VRM Class III (382,000 acres); and all other lands, including the Middlecountry and Frontcountry RMZs would have a VRM Class IV (440,000 acres).

Effects from Travel Management

Under Alternative C, effects from travel management outside of the SRMA and in Primitive Zones would be the same as Alternative B.

Travel Management within the SRMA

The **Semi-Primitive Zones** (171,000 acres), which includes Beaver Creek WSR Corridor and the White Mountains Highlands, allow cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

The **Backcountry Zone** (382,000) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and

weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. Same as Alternative A, Windy Creek and Fossil Creek drainages are closed to OHV use from April 15 to August 31. This closure helps protect visual resources by closing these drainages within the river corridor to travel from April 15 until the snow melts along approximately 27 miles.

In both the Semi-Primitive and Backcountry zones, the summer use of OHV weighing 1,000 pounds curb weight and less and all use of motorized vehicles greater than 1,000 pounds curb weight may be allowed by permit. The impacts from vehicles would vary depending on the size of vehicle, season of travel, and the number of passes made. They would be similar to impacts described for cross-country travel except on a larger scale. Stipulations could be attached to permits to reduce impacts.

The **Middlecountry Zone** (398,000 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed on designated trails only. Travel off designated trails or designated routes will be allowed to retrieve legally harvested game within this zone only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails except for game retrieval. Multiple passes over the same travel route for the retrieval of game could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques, or mineral soil area. These management activities help protect the visual resources on 398,000 acres.

The heavier UTVs would be allowed designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails. These management activities help protect the visual resources on 398,000 acres. The use of UTVs off designated trails and all use of motorized vehicles greater than 1,500 pounds curb weight off of roads and outside designated areas may be allowed by permit. Visual resources would be protected through the use of management class objectives and the visual contrast rating process when permits are considered.

The **Frontcountry Zone** (38,500 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed on designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails. These management activities help protect the visual resources on 38,500 acres.

The heavier UTVs would be allowed designated trails only and no game retrieval would be allowed. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened designated trails. These management activities help protect the visual resources on 38,500 acres.

In addition, the Table Top Mountain trail, the Ski Loop trail and the Summit trail, are limited to non-motorized use only. A portion of the Wickersham Trail is closed to OHV use from April 15 to June 1. This seasonal closure helps protect visual resources by closing this trail to travel until soils are suitable for travel without resource damage. These management actions help protect visual resources along these trails.

The Frontcountry Zone also allows for use of highway vehicles and OHVs weighing 1,500 pounds curb weight along approximately 11 miles of mining tailings along Nome Creek. These areas are hardened and show little change from the existing modified landscape. These management actions impact visual resources along these travel areas. The use of UTVs off designated trails/areas and other motorized vehicles greater than 1,500 pounds curb weight may be allowed by permit. Visual resources would be protected through the use of management class objectives and the visual contrast rating process when permits are considered.

Effects from Special Designations

Under Alternative C, the White Mountains ACEC would not be designated and Fossil Creek would not be recommended as suitable for inclusion to the National Wild and Scenic Rivers system.

The three designated RNAs would continue, helping to protect visual resources on 12,600 acres. Management of the RNAs would differ from Alternatives A and B. Primitive camping and the construction of hiking trails would be allowed. Visual impacts from trail construction include changes in color, line, and texture on the landscape. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil areas. Most trails would attract attention of the casual observer if viewed from a higher observation point and if the trails were located within the Foreground-Middleground and Background Zones. Trails or routes that are properly designed and viewed from ground level, however, would not generally attract the attention of a casual observer, with the exception from trailhead observation points.

Of VRI Class I lands (1,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, one-hundred percent (12,000 acres) would be managed as Class I. No lands were identified as VRI Class III or IV lands.

Same as Alternatives A and B, the Beaver Creek WSR Corridor would be managed as a VRM Class I.

4.7.1.5.5. Alternative D

In general, this alternative anticipates the greatest amount of resource development and adopts the least restrictive VRM classes that would allow major development while protecting visual resource in certain areas.

Effects from Fish and Aquatic Species

There are eight RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 205,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

Of VRI Class I lands within RCAs (66,000 acres) one-hundred percent would be managed under Class I resulting in the preservation of the existing visual character of the landscape. Of VRI Class II lands within RCAs, two percent or 4,000 acres would be managed as Class I, twenty-two percent or 42,000 acres would be managed as Class II lands, while thirty-six percent (68,000 acres) would be managed as Class III lands allowing some change to the natural landscape and forty percent or 75,000 acres would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Visual Resources

Under Alternative D, of VRI Class I (70,000 acres or seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of those lands. These lands, the Beaver Creek WSR, have an A rating for scenic quality, high sensitivity and occur in the foreground-middle ground zone.

Additionally, of VRI Class II lands (ninety-three percent), one percent or 12,000 acres would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the Beaver Creek WSR Corridor. Approximately twelve percent or 123,000 acres of VRI Class II lands would be managed as VRM Class II while thirty-one percent or 321,000 acres would be managed as Class III lands, potentially resulting in only partially retention of landscape characteristics; and forty-eight percent or 494,000 acres would be managed as VMR Class IV lands potentially resulting in a high level of change to the characteristic landscape. These lands have an A rating for scenic quality, a high sensitivity and occur in both the Foreground-Middleground and Background zones.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

Effects from Wilderness Characteristics

Visual characteristics are related to the criteria used to determine the presence of wilderness characteristics which includes naturalness. Management decisions to preserve wilderness characteristics help to preserve the visual resources of the area by limiting surface-disturbing activities and maintaining natural vegetation and landform. Under Alternative D, wilderness characteristics would be maintained on 205,000 acres (twenty percent), limiting activities that impact the appearance of naturalness.

Of VRI Class I lands where wilderness characteristics will be maintained (70,000 acres) one-hundred percent would be managed under Class I resulting in the preservation of the existing visual character of these lands. Of VRI Class II lands where wilderness characteristics will be maintained, nine percent or 12,000 acres would be managed as Class I while ninety-one percent or 123,000 acres would be managed as Class II lands. No lands where wilderness characteristics will be maintained were identified as VRI Class III or IV lands.

Effects from Wildlife

Same as Alternative B.

Effects from Forest and Woodland Products

Effects under Alternative D would be the same as Alternative C, except personal use of timber would not be excluded from the Beaver Creek WSR Corridor and the RNAs, increasing the potential for impacts in these areas. The size and scope of impacts would depend on the size of the area and management restrictions required.

Effects from Land and Realty

Same as Alternative C, no transportation corridors or ROW avoidance areas would be identified, resulting in potential impacts to visual resources.

Under Alternative D, a portion of PLO 4167 on Perhaps Creek would be revoked. This revocation would allow 200 acres to be transferred out of BLM management and open for development and associated surface disturbance activities.

Effects from Leasable Minerals

Approximately 569,000 would be closed to fluid and solid leasable minerals, including the RNAs, the Primitive RMZ, Beaver Creek RMZ, Highlands RMZ, Cache Mountain RMZ, Nome Creek RMZ, Wickersham/Blixt RMZ, the Perhaps Creek recreational withdrawal, and all disposal lands. These actions would protect visual resources by not allowing surface disturbance activities associated with leasable mineral development.

Approximately 451,000 acres in the Foothills Middlecountry RMZ would be open to leasable minerals subject to minor constraints, such as seasonal restrictions. Although almost half of the subunit would be open to leasable minerals, no exploration, leasing, or development is anticipated due to the low development potential for the area. Impacts to visual resources by the development of fluid leasable minerals are described under Impacts Common to All Subunits.

Effects from Salable Minerals

Under Alternative D, the entire subunit (1,020,000 acres) would be open to salable minerals. Impacts from the mining of salable minerals are described under section 4.3.1.9. Impacts to visual resources would depend on the scale of the action and the number of mineral sites mined. While the entire subunit is open to salable minerals, it is anticipated that demand for material will be met from production on state lands and no new federal material sites are anticipated. Mining activities for salable minerals would generally occur along roads due to transportation requirements.

Effects from Locatable Minerals

Same as Alternative B.

Effects from Hardrock Minerals

Under Alternative D, approximately 860,000 acres would be closed to hardrock mining, protecting visual resources in these areas. Closed areas include Beaver Creek WSR, all RNAs, all of White Mountains Highlands and Cache Mountain RMZs, and portions of the White Mountains Foothills RMZ. This would protect visual resources by not allowing surface-disturbing activities associated with mineral development.

Approximately 160,000 acres would be open to leasing of hardrock minerals. Open areas include the eastern portion of the White Mountains Foothills and Nome Creek RMZs. Impacts from the mining of leasable hardrock minerals are described under section 4.3.1.9. Impacts to visual resources would depend on the scale of the action and the number of mineral sites mined.

The Quartz Creek area would be open to suction dredging only with no operations anticipated. However, if an operation occurred, impacts would be from a camp footprint of less than one acre. The movement of materials occurs underwater and thus does not have a noticeable impact to visual resources and is generally redistributed each spring during break-up or high water events. Impacts from various types of mining operations are described under section 4.3.1.9.

Three small-scale operations are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine (10–15 years) for a total of 44 to 66 acres of disturbance. Impacts from all three operations would impact 132 to 198 acres. It is anticipated that one large-scale operation may be developed under this alternative. The operation would have a disturbed annual footprint of 16 acres over the life of the mine (10–15 years) for a total of 160 to 240 acres of disturbance.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between 2 and 52 acres annually. Reclamation would generally occur annually with the only impacts to visual resources from camps. It is anticipated that only one operation would occur over the life of this plan.

Of the 160,000 acres open to hardrock mining, no lands were identified as VRI Class I, III or IV. Of VRI Class II lands, 118,000 (74 percent) would be managed as Class II and 42,000 acres (26 percent) would be managed as Class IV.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (70,000 acres) one-hundred percent would be retained under Class I management. Of VRI Class II lands, one percent or 12,000 acres would be managed as Class I, twelve percent (123,000 acres) would be managed as Class II, while thirty-one percent or 321,000 acres would be managed as Class III lands allowing some change to the natural landscape and forty-eight percent (494,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. No lands were identified as VRI Class III or IV lands.

Under Alternative D: the Beaver Creek WSR Corridor and Primitive RMZ would have a VRM Class I (82,000 acres); the Backcountry RMZ would have a VRM Class III (445,000 acres); all remaining lands including Middlecountry and Frontcountry RMZs would have a VRM Class IV (494,000 acres).

Effects from Travel Management

Under Alternative D, effects from travel management outside of the SRMA would be the same as Alternative B.

Travel management within the SRMA

In all zones, restrictions or closures associated with travel may occur to protect resources. These actions would improve visual resources by restricting or eliminating damaged to vegetation and clearing of trails.

Primitive Zones (RNAs) are closed to OHV use. This helps protect visual resources by preventing surface disturbance to vegetation and soils from motorized vehicles on 12,600 acres.

The **Semi-Primitive Zone** (69,000 acres), which consists of the Beaver Creek WSR Corridor, allows cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

The **Backcountry Zone** (445,000 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation. In addition, Windy Creek and Fossil Creek drainages are closed to OHV use from April 15 to August 31. This closure helps protect visual resources by closing these drainages within the river corridor to travel from April 15 until the snow melts along approximately 27 miles.

The summer use of OHV weighing 1,000 pounds curb weight and less and all use of motorized vehicles greater than 1,000 pounds curb weight within the Semi-Primitive and Backcountry zones may be allowed by permit. Visual resources would be protected through the use of management class objectives and the visual contrast rating process when permits are considered.

The **Middlecountry Zone** (452,000 acres) and the **Wickersham Dome-Fred Blixt Frontcountry RMZ** (7,500 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover on lower growing vegetation.

Similar to Alternative A, cross-country summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed. Multiple passes over the same travel route could cause changes in color, line, and texture on the landscape. Repeated OHV use leads to destruction of vegetation, which in turn results in soil exposure, creating a contrast between the adjacent greens of natural vegetation and the browns and grays of exposed soil and

organic materials. A contrast in line occurs when the irregular characteristics of vegetation is altered by a more regular line in the form of a developed route or constructed trail. Texture characteristics change from the natural course or rough textures of diverse vegetation to the smooth uniform texture of a developed trail, trail hardening techniques or mineral soil area. Limiting by weight, helps protect the visual resources on 460,000 acres.

The heavier UTVs would be allowed on designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened trails. These management activities help protect the visual resources on 460,000 acres. The use of larger vehicles may be allowed by permit.

Same as Alternatives B and C, a portion of the Wickersham Trail is closed to OHV use from April 15 to June 1. This closure helps protect visual resources by closing this trail to travel until soils are suitable for travel without resource damage. This management action helps to protect visual resources on approximately 28,000 acres.

The **Nome Creek Frontcountry Zone** (31,000 acres) allows for cross-country motorized use of OHV weighing 1,000 pounds curb weight and less without permit for winter travel. The season of travel and weight restriction helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape, even with cross-country travel allowed, because of the frozen soils and snow cover.

Summer travel by OHVs weighing 1,000 pounds curb weight and less and a width not exceeding 50 inches is allowed on designated trails only. This helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened trails. These management activities help protect the visual resources on 31,000 acres.

UTVs would be allowed on designated trails only and no game retrieval by UTV would be allowed, helping to reduce the amount of surface disturbance and resulting changes to line, form, color and texture of the natural landscape because travel is limited to hardened trails. These management activities help protect the visual resources on 31,000 acres.

Several trails are limited to non-motorized use only and the use of highway vehicles is allowed on approximately 11 miles of mine tailings along Nome Creek. Impacts would be the same as Alternatives B and C.

Effects from Special Designations

Same as Alternative C.

4.7.1.5.6. Alternative E (Proposed RMP)

In general, Alternative E represents a mix and variety of actions that best resolves issues and concerns in consideration of all values and programs and adopts a blend of VRM classes that would allow major development while protecting visual resource in certain areas. It has the highest percentage of VRM Class II lands of all Alternatives. Class II allows a low level of change to the characteristic landscape where management activities may be seen but not attract the attention of the casual observer.

Effects from Fish and Aquatic Species

Under Alternative E, the Sumner Creek-Nome Creek watershed has been identified as a High Priority Restoration Watershed and would be emphasized for restoration and/or protection on 40,000 acres. Active restoration projects, such as willow planting, seeding and fertilizing would have positive impacts to areas with surface disturbance. Changes to line, color and texture would result in that the area would be returned to a more natural looking landscape. There are fourteen RCAs identified for accelerated rehabilitation of habitats which include active revegetation and streambank stabilization techniques on 447,000 acres. These activities would have a positive impact to areas with surface disturbance in returning the disturbance to a more natural looking landscape faster than natural revegetation.

All of the lands identified as important watershed, have a VRI Class of I or II. Of VRI Class I lands (70,000 acres) one-hundred percent would be managed under Class I resulting in the preservation of the existing visual character of the landscape. Of VRI Class II lands, two percent or 25,000 acres would be managed as Class I, while eighty-six percent or 882,000 acres would be managed as Class II lands. Only the Nome Creek Watershed (HUC #190404022004; 40,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Visual Resources

Under Alternative E, of VRI Class I (70,000 acres or seven percent), one-hundred percent would continue to be managed as VRM Class I resulting in preservation of the existing visual character of those lands. These lands, the Beaver Creek WSR, have an A rating for scenic quality, high sensitivity and occur in the foreground-middle ground zone.

Additionally, of VRI Class II lands (ninety-three percent or 950,000 acres), two percent or 25,000 acres would be managed as VRM Class I resulting in preservation of the existing visual character of these lands associated with the RNAs. Approximately eighty-six percent or 882,000 acres of VRI Class II lands would be managed as VRM Class II while four percent or 42,000 acres would be managed as VRM Class IV lands potentially resulting in a high level of change to the characteristic landscape. These lands have an A rating for scenic quality, a high sensitivity and occur in both the Foreground-Middleground and Background zones. No lands would be managed as VRM Class III lands.

Using design fundamentals of proper siting and location, reducing unnecessary disturbance and by repeating the landscape elements of form, line, color and texture for all surface-disturbing activities regardless of VRM Class can contribute significantly in reducing impacts to visual resources.

In summary, 96,000 acres will be managed as VRM Class I, 883,000 acres will be managed as VRM Class II, no lands will be managed as VRM Class III and 42,000 acres will be managed as VRM Class IV.

Effects from Wildlife

Under Alternative E, 417,000 acres would be managed as crucial caribou and Dall sheep habitat to protect important values for caribou calving and post calving habitat, Dall sheep habitat and mineral licks. The protection of habitat would also help protect visual resources on 417,000 acres.

Of VRI Class I lands within crucial caribou and Dall sheep habitat, one-hundred percent would be managed under Class I resulting in the preservation of the existing visual character of these

lands. Of VRI Class II lands within crucial caribou and Dall sheep habitat, one-hundred percent would be managed as Class II allowing a low level of change to the natural characteristics. No lands within crucial caribou and Dall sheep habitat were identified as VRI Class III or IV lands.

Effects from Wilderness Characteristics

Under Alternative E, no lands would be managed to protect wilderness characteristics as a priority over other resource values and multiple use. Wilderness characteristics would be maintained on 777,000 acres, by limiting activities that impact wilderness characteristics of size, naturalness and outstanding opportunities for solitude or primitive and unconfined recreation.

Of VRI Class I lands where wilderness characteristics will be maintained (70,000 acres) one-hundred percent would be managed under Class I resulting in the preservation of the existing visual character of these lands. Of VRI Class II lands where wilderness characteristics will be maintained, one percent or 17,000 acres would be managed as Class I while seventy percent or 900,000 acres would be managed as Class II lands and eighteen percent or 236,000 acres would be managed as Class IV. No lands where wilderness characteristics will be maintained were identified as VRI Class III or IV lands.

Effects from Forest and Woodland Products

Under Alternative E, personal use of timber and forest products, as well as commercial timber salvage sales and commercial use forest products would be considered on all BLM-managed lands (1,020,000 acres). Impacts from commercial timber sales (large and small) would be considered on all BLM-managed lands except within the Beaver Creek WSR, RNAs and crucial caribou and Dall sheep habitat. These acres (499,000) would be protected from impacts associated with commercial timber sales on 499,000 acres. Impacts would depend on the location, size or the area and harvest techniques used, however, harvesting forest products would impact color, line and texture throughout the subunit by allowing the harvest of white and black spruce for firewood and house logs.

Effects from Land and Realty

Same as Alternative D except that all of Perhaps Creek Parcel (505 acres) would be made available for state selection, removing these acres from BLM management.

Effects from Leasable Minerals

Approximately 1,016,000 would be closed to fluid and solid leasable minerals, including the White Mountains SRMA. These actions would protect visual resources by not allowing surface disturbance activities associated with leasable mineral development. Only the Livengood area (4,000 acres) would be open to mineral leasing subject to standard terms, stipulations and operating procedures. Impacts to visual resources by the development of fluid and solid leasable minerals are described under Impacts Common to All Subunits. No lands for leasable minerals were identified as VRI Class I, III or IV. Of VRI Class II lands, one-hundred percent (4,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Effects from Salable Minerals

Under Alternative E, ninety-three percent of the subunit (951,000 acres) would be open to salable minerals. Impacts from the mining of salable minerals are described under section 4.3.1.9. Impacts to visual resources would depend on the scale of the action and the number of mineral

sites mined. While the majority of the subunit is open to salable minerals, it is anticipated that demand for material will be met from production on state lands and no new federal material sites are anticipated. Mining activities for salable minerals would generally occur along roads due to transportation requirements. Beaver Creek WSR Corridor (69,000 acres or seven percent of the subunit) would be closed to salable minerals, protecting visual resources.

Effects from Locatable Minerals

Under Alternative E, one-hundred percent of the subunit (1,016,000 acres) would remain closed to locatable minerals protecting visual resources in these areas. Approximately 4,000 acres would be open to locatable minerals. Impacts from the mining of locatable minerals are described under section 4.3.1.9. Impacts to visual resources would depend on the scale of the action and the number of mineral sites mined. It is anticipated that there could be one large-scale placer mine operation. Each operation would have a disturbed annual footprint of 16 acres over the life of the mine for a total of 60 to 80 acres of disturbance. Impacts from operations would impact 60 to 80 acres over the life of this plan. Up to three small-scale placer mine operations are anticipated over the life of the plan. Each operation would have a disturbed annual footprint of 4.4 acres over the life of the mine for a total of 20 acres of disturbance.

No lands open for locatable minerals were identified as VRI Class I, III or IV lands. Of VRI Class II lands one-hundred percent (4,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape.

Mineral exploration activities with resulting camp and field sampling would impact visual resources on between 6 to 50 acres. Reclamation would generally occur annually with the only impacts to visual resources from camps. Only one exploration operation is anticipated to occur over the life of this plan.

No suction dredging operations are anticipated under this plan.

Effects from Recreation

Recreation Management Zones are managed for different physical settings which include remoteness, naturalness and visitor facilities. Of these, naturalness and visitor facilities impact visual resources by setting prescriptions for management, i.e., describing the amount of naturalness and how facilities will sit on the landscape. These prescriptions provide a range from Primitive, Semi-Primitive, Backcountry, Middlecountry, Frontcountry, Rural and Urban, each with different levels of naturalness and description of how facilities will sit on the landscape.

Of VRI Class I lands (71,000 acres) almost one-hundred percent would be retained under Class I management with 400 acres managed as Class II. Of VRI Class II lands, two percent or 25,000 acres would be managed as Class I, eighty-six percent (882,000 acres) would be managed as Class II, while four percent (42,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. No lands were identified as VRI Class III or IV lands and no lands would be managed as Class III.

Under Alternative E: the Beaver Creek WSR Corridor, the RNAs and the White Mountains Spine Area RMZs would have a VRM Class I (96,000 acres); the White Mountains Highlands RMZ (as Primitive), the Cache Mountains (Backcountry) RMZ, and the White Mountains Foothills RMZ (Middlecountry) would have a VRM Class II (881,000 acres); all remaining lands including Frontcountry RMZs would have a VRM Class IV (43,000 acres).

Effects from Travel Management

Under Alternative E, open cross-country travel on BLM lands is restricted to motorized vehicles 1,000 pounds curb weight or less and 50 inches in width or less year round, and may impact visual resources primarily by disturbing vegetation by repeated passes and by clearing of travel routes. Weight restricted travel impacts 1,020,000 acres. The restriction of motorized use to OHVs 50 inches or less in width and weighing 1,000 pounds curb weight or less helps reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape on approximately 1,020,000 acres. However, allowing summer and winter cross-country travel by OHVs could result in an increase of user-created travel routes with impacts to vegetation in line, color and texture. It is anticipated that an additional 200 miles of user-created travel routes could be developed over the life of the plan. Typically, user-created summer travel routes are more visible than winter travel routes that tend to be positioned near valley bottoms and are protected by snow and frozen ground. Summer travel routes are typically developed in areas that show changes to line, color and texture with repeated passes. Cross-country travel in Beaver Creek Corridor is limited to winter travel with limited impacts to line, color and texture since summer use of OHVs within the corridor would not be allowed. Vehicles weighing up to 1,500 pounds curb weight and 64 inches in width or less would be allowed within areas designated for use by UTVs. These areas are a portion of the Wickersham Creek Trail, the Trail Creek Trail, the trail from Mile 23.5 of the Elliott Highway to the Wickersham Creek Trail, the Quartz Creek Trail and the Nome Creek tailings area. Vehicles weighing less than 10,000 pounds curb weight would be allowed on existing roads only, protecting visual resources by restricting use to already hardened areas.

All other vehicle use may be allowed under permit. The impacts would vary depending on the size of vehicle, season of travel, and the number of passes made, but would be similar to impacts described for open cross-country travel in section 4.3.1.9. It is anticipated that an additional 300 miles of trail will be created by users over the life of the plan impacting 1.6 acres per mile on average for anticipated changes to line, color and texture on an additional 480 acres or less than one percent of the subunit.

Of VRI Class I lands (70,000 acres) almost one-hundred percent would be retained under Class I management with 400 acres managed as Class II. Of VRI Class II lands, two percent or 25,000 acres would be managed as Class I, eighty-six percent (882,000 acres) would be managed as Class II, while four percent (42,000 acres) would be managed as Class IV lands allowing a visible level of change to the landscape. No lands were identified as VRI Class III or IV lands and no lands would be managed as Class III.

Effects from Wildlife

Under Alternative E, 417,000 acres would be managed as crucial caribou and Dall sheep habitat to protect caribou and Dall sheep habitat. Management decisions to protect wildlife habitat helps to preserve the visual characteristics of the area. The effects would be the same as Alternative C. Crucial caribou and Dall sheep habitat will remain closed to leasable and locatable minerals, subject to valid existing rights. Seasonal restrictions for a one-half mile radius around ungulate mineral licks will limit development and use in these areas. Seasonal restrictions or closures of areas to motorized use may occur to protect habitat. These actions would help reduce the amount of surface disturbance to vegetation and soils with resulting changes to line, form, color and texture of the natural landscape to 417,000 acres.

Salable minerals, land use permits, and leases could be authorized subject to constraints for ungulate mineral licks, but would be unlikely. The size and scope of impacts would depend on the size of the requested use and techniques used. Impacts to visual resources from travel and various land uses are described in section 4.3.1.9.

No lands within crucial caribou and Dall sheep habitat were identified as VRI Class III or IV lands. Of VRI Class I lands within crucial caribou and Dall sheep habitat almost one-hundred percent (36,000 acres) would be managed as Class I lands while 10 acres would be managed as Class II. Of VRI Class II lands within crucial caribou and Dall sheep habitat four percent (14,000 acres) would be managed as Class I lands while ninety-six percent (367,000 acres) would be managed as Class II lands, protecting the natural appearance while allowing for a low level of change to the characteristic landscape.

Effects from RNAs and Wild and Scenic Rivers would be the same as Alternative C.

4.7.1.6. Wilderness Characteristics White Mountains Subunit

Summary of Effects

There are 1,014,500 acres identified within the White Mountains Subunit as having wilderness characteristics of size, naturalness, and the opportunity for solitude or a primitive unconfined type of recreation experience. Managing lands for wilderness characteristics would not allow for many surface-disturbing activities. See section 4.3.1.10 Impacts Common to All Subunits. Alternative B would protect the most acres for wilderness characteristics while Alternative A would not identify any acres as having wilderness characteristic. Alternative C provides a balance between protection and resource use while Alternative D provides for resource development and protects the least amount of land for wilderness characteristics. Alternative E emphasizes other multiple uses while applying management restrictions to reduce impacts to wilderness characteristics.

4.7.1.6.1. Alternative A (No Action)

No lands are managed for wilderness characteristics under this Alternative. Of the 1,014,500 acres identified as having wilderness characteristic, none would be directly managed to protect those values. Other actions and management strategies may help protect those values indirectly, such as managing for a Primitive or Semi-Primitive recreation setting. All lands with wilderness characteristics are currently withdrawn from mineral entry, so no mining-related impacts to wilderness characteristics would occur.

4.7.1.6.2. Alternative B

Of the 1,014,500 acres identified as having wilderness characteristic, 509,000 acres (fifty percent), would be directly managed to protect those values. Other actions and management strategies may help protect wilderness values indirectly on the remaining 505,463 acres. All lands with wilderness characteristics are currently withdrawn from mineral entry, so no mining-related impacts to wilderness characteristics would occur. Approximately 951,000 acres would be open to salable minerals however the reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect much less than one percent of all available acres. Development of recreational facilities and travel management in Middlecountry and Frontcountry RMZs would also impact wilderness characteristics in localized areas.

4.7.1.6.3. Alternative C

Of the 1,014,500 acres identified as having wilderness characteristic, 312,000 acres (thirty-one percent), would be directly managed to protect those values. Other actions and management strategies may help protect wilderness values indirectly on the remaining 702,500 acres. All lands with wilderness characteristics are currently withdrawn from mineral entry, so no mining-related impacts to wilderness characteristics would occur. Approximately 951,000 acres would be open to salable minerals however the reasonably foreseeable development does not suggest a high percentage of development during the life of the plan. Even if all development is realized it would affect much less than one percent of all available acres. Development of recreational facilities and travel management in Middlecountry and Frontcountry RMZs would also impact wilderness characteristics in localized areas.

4.7.1.6.4. Alternative D

Of the 1,014,500 acres identified as having wilderness characteristic, 205,000 acres (twenty percent), would be directly managed to protect those values. Other actions and management strategies may help protect wilderness values indirectly on the remaining 890,500 acres. All lands with wilderness characteristics are currently withdrawn from mineral entry, so no mining-related impacts to wilderness characteristics would occur. Available acres for leasable minerals are 451,000 and 1,020,000 acres would be open to salable minerals. The reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan and no leasable mineral exploration or development is anticipated. Even if all development is realized it would affect less than one percent of all available acres. Development of recreational facilities and travel management in Middlecountry and Frontcountry RMZs would also impact wilderness characteristics in localized areas.

4.7.1.6.5. Alternative E (Proposed RMP)

Of the 1,010,000 acres identified as having wilderness characteristics, those characteristics would be maintained on 777,000 acres by limiting activities that impact size, naturalness and opportunities for solitude or primitive and unconfined recreation. Available acres for leasable minerals are 4,000 and 951,000 acres would be open to salable minerals. The reasonably foreseeable development scenario does not suggest a high percentage of development during the life of the plan and no leasable mineral exploration or development is anticipated. Even if all development is realized it would affect less than one percent of all available acres. Development of recreational facilities and travel management in Middlecountry and Frontcountry RMZs would also impact wilderness characteristics in localized areas.

4.7.1.7. Wildlife White Mountains Subunit

Summary of Effects

Overall potential negative impacts to wildlife would be least in Alternative B and progressively greater in Alternatives C, E, A and D. Alternative D would allow leasing of locatable (160,000 acres) and leasable minerals (451,000 acres). Alternatives B and C would restrict summer OHVs to designated trails. Alternative E most differs from Alternative C in management of motor vehicle use. Decisions in alternative E would allow UTVs on some trails, allow airboats, hovercraft and personal watercraft, and allow winter OHVs everywhere including RNAs, but

other current motorized vehicle management would continue until a Comprehensive Travel Management Plan is completed. Alternative E would not prohibit summer OHV use except in RNAs. In Travel Management planning, Recreation Settings and management decisions for crucial caribou and Dall sheep habitat would be used to constrain summer OHV use, but if new summer OHV use occurs in portions of the 563,000 acres currently closed to this use, some impacts to wildlife would occur. Restrictions of summer OHV use to existing trails in some areas could be enacted in the Travel Management Plan. Only Alternative B designates an ACEC for protection of caribou calving/postcalving habitat and Dall sheep habitats. In Alternatives C and E, a smaller area is delineated as a Wildlife Conservation Area (or crucial caribou and Dall sheep habitat) and management provisions similar to those in the ACEC are applied. Alternatives C, D, and E also allow commercial sales of timber and other forest products.

In addition to the effects discussed in section 4.3.1.12 Impacts Common to All Subunits, Wildlife, impacts which would occur in the White Mountains Subunit under various alternatives are described below.

4.7.1.7.1. Effects Common to All Alternatives

Effects from Locatable Minerals

In all alternatives, the White Mountains NRA and associated lands contained in the SRMA are closed to mineral location and entry. There are existing mining claims which occur outside of the SRMA in the Livengood area, and placer and lode mining and exploration occurs on those. Mining will therefore only occur on existing claims in the subunit and impacts will be local in nature, primarily in the Livengood area where a large lode mine is being developed, which includes a minority of federal claims.

Effects from Travel Management

Motorized boat usage can result in disturbance of wildlife in and along Beaver Creek. Effects depend on noise levels, frequency and duration. Motorized boats of up to 15 horsepower can be launched from Nome Creek. Use of larger boat motors is not prohibited, but larger boat usage has typically only occurred from three private inholdings on Beaver Creek, limiting potential effects. The horsepower limitation for launching at Nome Creek limits the distance downstream that many boats will travel and then travel back upstream. Greater impacts could occur if use from private inholdings increased greatly, road access to lower Beaver Creek was developed, or technology advances allow easier travel with small motors.

4.7.1.7.2. Alternative A (No Action)

Effects from Wildlife

There is no specific provision to monitor or limit off-trail snowmobile use in caribou habitat, but similar actions could be taken under other provisions.

Effects from Leasable Minerals

There would be no effects as the entire subunit is closed to mineral leasing.

Effects from Recreation

The Primitive Management Unit (575,000 acres) is managed to protect remote, primitive values (Map 48). Use occurs mostly by winter recreationists along the winter trails system, which includes four cabins in the unit, and in the summer by hikers in the upper Nome Creek and Mount Prindle areas. Summer motorized use occurs on the Quartz creek trail which forms the boundary of the unit in that area. Impacts from recreation in this unit are minor. The Beaver Creek WSR is used mostly by summer float boaters, although motorized use is allowed and occurs mostly by small boats during hunting season in the upper portion. The Semi-Primitive Motorized unit (428,000 acres) is subject to the most recreational use (and variety of types of use).

Effects from Travel Management

Summer OHV use (less than 1,500 pounds GVWR) is allowed throughout the Semi-Primitive Motorized Management Unit (Map 48), although some areas have been closed to reduce or prevent resource damage. Cross-country OHV use will continue to increase under this alternative with an increase in number of OHV owners and an increase in the capabilities of machines to readily traverse difficult terrain. Direct loss of habitat will occur from cross-country OHV use as described in the Vegetative Communities, Effects Common to all Subunits section 4.3.1.8. Sheep use in the area surrounding a mineral lick in upper Little Champion Creek may be hampered by the combined and increasing levels of motorized and non-motorized recreation. Dall sheep could possibly abandon use of the area between Champion Creek and Quartz Creek under foreseeable levels of OHV activity, due to the very scattered nature of small tors for escape terrain. Caribou winter habitats in upper Victoria Creek could be affected by snowmobile use facilitated by trails created in summer by OHV users.

Effects from Special Designations

Mount Prindle, Limestone Jags, and Serpentine Slide RNAs are the only specially designated areas. In Alternative A, no camping is allowed in the RNA (though this has not been enforced) to avoid disturbing research projects. This limits human activities in the areas and limits disturbance of Dall sheep, raptors, and other species. Management of Beaver Creek as a WSR, even though it attracts recreational use, limits impacts to wildlife overall.

4.7.1.7.3. Alternative B

Effects from wildlife

A provision to monitor snowmobile use of non-forested caribou habitat and adjust management if necessary will minimize potential future impacts should use of these habitats increase. An ACEC is designated in this alternative to protect caribou calving/postcalving and Dall sheep habitat.

Effects from Leasable Minerals

Same as Alternative A.

Effects from Recreation

RMZ designation in this alternative manages for smaller changes in the landscape than other alternatives (Map 533). A Primitive Area (White Mountains Spine) is created in this Alternative. A Travel Management plan limiting summer OHV travel to designated trails is the biggest change from current recreation management (see Effects from Travel Management). Effects of recreation to wildlife will be reduced relative to current management in this alternative. The

White Mountains Spine Primitive Area is Dall sheep habitat and the upper Victoria Creek drainage (designated Semi-Primitive in Alternative B) contains caribou calving range, caribou winter range, and areas of high-density moose habitat; potential negative effects from recreation in these areas will be reduced in this Alternative.

Effects from Travel Management

Summer OHV use is allowed in the Frontcountry and Middlecountry RMZs (491,000 acres) but is restricted to a system of designated trails. This restriction will greatly reduce the potential impacts of summer OHVs on wildlife. Off-highway vehicle travel will be limited to a designated subset (approximately 139 miles initially) of existing trails. The total miles of various types of existing trails, from well-established trails to those barely visible, are unknown but probably are much more than the 139 miles of trail to be designated. Trails are sometimes spread widely enough that surface disturbance may better be measured in area than miles. Over time, managed/constructed trails will replace many designated trails not currently under management. These trails can be routed so as to minimize impacts to sensitive wildlife and habitats. Pioneering of new trails will stop and current non-designated trails will begin to recover, dependent on the success in persuading off-highway vehicle users to remain on designated trails. The area of wildlife habitat influenced by off-highway vehicles will decrease dramatically.

Effects from Special Designations

Designated RNAs are the same as Alternative A and managed similarly. The White Mountains ACEC includes the majority of historical calving habitats of the Fortymile caribou herd and the current calving and postcalving habitats of the White Mountains caribou herd, as well as all Dall sheep habitats. The ACEC is closed to mineral location, entry and leasing and motorized vehicle use will be limited so as to maintain caribou and sheep habitat quality (including portions of a Middlecountry RMZ).

Fossil Creek would be considered suitable for designation as a “scenic” river. Management as a Wild and Scenic River would differ little from that otherwise proposed in this alternative.

4.7.1.7.4. Alternative C

Effects from wildlife

Same as Alternative B except no ACEC would be designated. Instead, the area would be managed as a Wildlife Conservation Area with identical management decisions and SOPs. The effectiveness of these management decisions and SOP's in protecting habitat values is likely somewhat smaller than would be the same decisions applied to an ACEC. The area of delineated crucial caribou and Dall sheep habitat is smaller than that in Alternative B but includes most Dall sheep habitat and most of the concentrated calving/postcalving area of the White Mountains caribou herd. The portion of calving/postcalving area and Dall sheep habitats which overlapped with the Middlecountry RMZ was not included in delineation of crucial caribou and Dall sheep habitat and some degradation of wildlife habitat from motorized use is possible, especially in the Bear, Quartz, and Champion, and Little Champion Creek areas. At some level of OHV use in the area of granite tors west of the upper Quartz Creek, Dall sheep use of the area may cease, although appropriate trail designations could minimize this potential.

Effects from Leasable Minerals

Same as Alternative A.

Effects from Recreation

Relative to Alternative B, this alternative converts some Semi-Primitive RMZ to Backcountry RMZ (Cache Mountain) and some to Middlecountry RMZ (White Mountains Foothills). The latter change increases the area in which summer motorized use is allowed.

This alternative is very similar to Alternative A, except that the Alternative A “Primitive Management Unit” is designated a Semi-Primitive RMZ (Victoria Creek area) and the remainder is designated as Backcountry. Also, an area adjacent to Beaver Creek WSR Corridor is opened to motorized use (becoming Middlecountry) and a portion of Roy Creek drainage is closed to motorized use (becoming Backcountry). This alternative represents very little change from Alternative A, except for the designation of a largely inaccessible area as Primitive and a Travel Management decision to limit OHV use to designated trails (except for game retrieval).

Negative effects from recreation are expected to be lower in Alternative C than in Alternative A, but somewhat higher in Alternative C than in Alternative B. The Backcountry RMZ might be managed to allow more human use than the Alternative A “Primitive Management Unit,” in which case there may be minor additional impacts in those areas. However, with the Travel Management decision to limit summer OHV use to designated trails, potential impacts to wildlife from Middlecountry RMZ management will be greatly reduced relative to Alternative A.

Effects from Travel Management

Summer OHV use on designated trails is allowed in Frontcountry and a somewhat larger Middlecountry RMZ (Map 54) than in Alternative B. Off-trail use will be allowed for game retrieval. This provision may create some of the impacts associated with allowance of cross-country travel (discussed under section 4.3.1.12 Impacts Common to all Subunits), but those impacts are expected to be relatively very minor. The off-trail use for game retrieval will be very limited and any tracks created will not be typically continued to be used and deepened, as they might in Alternatives A or D. In comparison to Alternatives A or D, the impacts of summer OHV use would be very small in Alternative C. UTVs (larger OHVs) will be allowed on some trails (27 miles) that are constructed to a standard that will allow use with minimal degradation of the trail. UTVs on select existing trails will have little impact. However, trails constructed or improved to support use by large OHVs begin to approach roads in size and design, with relatively larger potential impacts.

Effects from Special Designations

Designated RNAs are the same as Alternative B, but primitive camping is allowed, which may result in slightly greater human activities in the areas and disturbance of Dall sheep, raptors, and other species.

An ACEC for caribou and sheep habitat is not designated in this alternative, but instead a Wildlife Conservation Area is designated. The same management provisions will apply as to the ACEC in Alternative B. The Wildlife Conservation Area is smaller than the Alternative B White Mountains ACEC but includes most Dall sheep habitat and most of the concentrated calving/postcalving area of the White Mountains caribou herd. The portion of the calving/postcalving area which overlapped with the Middlecountry RMZ was not included in the Wildlife Conservation Area

and some degradation of wildlife habitat from motorized use is possible, although density of designated trails is not expected to reach levels that would impair use by caribou.

Fossil Creek is not classified as suitable for designation as a “scenic” river in this alternative. This will have minor effect on management during the life of the plan, due to other management provisions.

4.7.1.7.5. Alternative D

Effects from Wildlife

Similar to Alternative C, except there is no specific provision to monitor or limit off-trail snowmobile use in caribou habitat.

Effects from Leasable Minerals

The Middlecountry RMZ (Map 55), nearly half of the subunit, is open to leasing, but only the northwest portion of Victoria Creek drainage is considered to be a high potential zone for leasable minerals. This area includes known winter range for the White Mountains caribou herd and moose habitat supporting a moderately dense moose population. A low mineral potential zone occurs in the Wickersham, Moose, Trail, Roy, and Bear creek drainages. This includes moose habitat of varying moose densities (low to high) and caribou calving/postcalving habitat (mostly north of the Beaver Creek WSR Corridor).

Other portions of the Middlecountry RMZ, although classified as “no potential” for leasable minerals, contain valuable wildlife habitats that could potentially be impacted by mineral exploration or leasing which would be allowed, including Dall sheep habitat in the Quartz Creek/Champion Creek area and a Dall sheep movement corridor in lower Victoria Creek and additional portions of caribou calving/postcalving range. The greatest conflicts with wildlife would occur in lower Victoria Creek sheep habitat and the area north of Nome Creek and upper Beaver Creek. Disruption of movements between Victoria Mountain and Mount Schwatka and use of a mineral lick along Victoria Creek may occur as a result. Approval of leasing proposals are discretionary, with approval dependent on effects on other resources, and so effects on wildlife species vulnerable to impacts may be mitigated during NEPA evaluation of any proposal.

Effects from Recreation

This alternative has the largest area of Middlecountry RMZ (452,000 acres) and so the greatest area of allowed summer motorized use and increased emphasis on facility development. Relative to Alternative B, this alternative eliminates the White Mountains Spine Primitive Area and the Semi-Primitive White Mountains Highlands RMZ. Relative to Alternative A it will allow motorized use in a large portion of lower Victoria Creek and a relatively small area along Beaver Creek south of Serpentine Slide RNA. Travel management under this alternative will allow cross-country summer OHV use, with impacts of this activity occurring in a greater area. Effects of recreation on wildlife will be higher than all other alternatives. The area of Middlecountry is increased greatly (54,000 to 123,000 acres) and is higher than other Alternatives, and higher than the area of Semi-Primitive Motorized Unit of Alternative A. Impacts would potentially occur to Dall sheep, caribou, moose and other wildlife, primarily in the northern portion of the White Mountains NRA.

Effects from Travel Management

Summer OHV use is allowed throughout Frontcountry and expanded Middlecountry Zones and that use is not restricted to trails. Effects from summer OHV use would be greatest in this alternative. In addition to effects described for Alternative A, opening of Victoria Creek drainage to OHVs could result eventually in a trail to or near lower Beaver Creek, potentially affecting Dall sheep in the area. Similar to Alternative C, UTVs would be allowed on designated trails but, the miles of designated UTV trail will approximately triple (112 miles). This allowance on select existing trails will have little impact. However, new trails constructed to support use by UTVs will have a larger footprint than trails constructed for smaller OHVs.

Effects from Special Designations

The effects from RNAs and WSRs would be the same as Alternative C.

Effects from Wild and Scenic Rivers designation and management are the same as Alternative C. The Wildlife Conservation Area would be smaller under this alternative than under Alternative B. It would protect most Dall sheep habitats and most of the core (most highly used) White Mountains caribou calving/postcalving habitat. Portions of current White Mountain and historical Fortymile caribou calving/postcalving habitats could be impacted by cross-country summer OHV use in Middlecountry RMZ.

4.7.1.7.6. Alternative E (Proposed RMP)

Effects from Forest Products

In Alternative E, commercial timber sales would be allowed (except within the Beaver Creek WSR Corridor, crucial caribou and Dall sheep habitat, and RNAs), and personal use of timber, commercial salvage sales and commercial use of forest products would be allowed on all lands. Although little activity is predicted, these actions could have effects as described in the Impacts Common to All Subunits section (4.3.1.12.1 Wildlife and 4.3.1.8.1 Vegetative Communities).

Effects from wildlife

Same as Alternative C, except that the area designated as a Wildlife Conservation Area will be instead delineated as crucial caribou and Dall sheep habitat. The same management provisions will apply, except that some management decisions were modified slightly. For example, summer OHV management limitations in the crucial caribou and Dall sheep habitat will provide somewhat more flexibility to allow summer OHV use. Also, the effect of excluding caribou calving/postcalving area and Dall sheep habitats which overlapped with the Middlecountry RMZ (included in the ACEC in Alternative B) from areas delineated as crucial caribou and Dall sheep habitat may be somewhat greater in Alternative E than Alternative C because cross-country summer OHV use is allowed in Alternative E. Therefore some degradation of wildlife habitat from motorized use is possible, especially in the Bear, Quartz, and Champion, and Little Champion Creek areas. At some level of OHV use in the area of granite tors west of the upper Quartz Creek, Dall sheep use of the area may cease, although appropriate OHV limitations could be implemented through Travel Management planning to minimize this potential.

Effects from Leasable Minerals

Same as Alternative B (entire subunit closed) except for 4,000 acres in the Livengood area. This would limit potential impacts to a small area.

Effects from Recreation

Alternative E delineates the same RMZs as Alternative C, and results in a small increase (relative to Alternative A) in area in which widespread summer OHV use would be allowed. This alternative represents very little change from Alternative A, except that summer OHV use could be allowed in Primitive, Semi-Primitive and Backcountry RMZs; the Backcountry RMZ might be managed to allow more human use than the Alternative A “Primitive Management Unit,” in which case there may be minor additional impacts in those areas; and a small and remote area is designated as a Primitive RMZ. Potential negative effects on wildlife from recreation would be higher in Alternative E than in C due primarily to the possibility of summer OHV use in all RMZs, especially Backcountry RMZs. HV use in Primitive, Semi-Primitive and Backcountry RMZs include disturbance of Dall sheep in habitats with little escape terrain and at mineral licks, nesting raptors including peregrine falcon and gyrfalcon, vegetation and soil disturbance and introduction of non-native invasive plants.

Effects from Travel Management

Unlike Alternative C, summer OHVs would not be limited to designated trails, so the overall effects of OHVs on wildlife and habitats would be considerably increased (particularly in Middlecountry RMZs that overlap with caribou calving/postcalving habitat that was not included in delineated crucial caribou and Dall sheep habitat). Also, the prohibition of summer OHV use in Primitive, Semi-Primitive, and Backcountry RMZs in all other alternatives is not included in Alternative E. Although Recreation Settings would limit OHV use in these RMZs, some impacts would occur if allowed. During travel management planning, additional public input and NEPA analysis would occur—restricting summer OHV use to designated trails may occur at least in some areas, and prohibitions on OHV use in Primitive, Semi-Primitive, and Backcountry RMZs could be enacted.

As in Alternative C, UTVs (larger OHVs) will be allowed on some trails (initially 27 miles) that are constructed to a standard that will allow use with minimal degradation of the trail. Use of UTVs on these 27 miles of generally wide existing trails will have little impact. However, trails constructed or improved to support use by UTVs begin to approach roads in size and design, with relatively larger potential impacts.

Motorboats are allowed in the White Mountains NRA in all alternatives, with a 15 horsepower restriction on boats launched in Nome Creek Valley. This restriction on the upper end of Beaver Creek Wild and Scenic River and the remoteness of the lower end has limited boat usage on Beaver Creek areas near Nome Creek or one of the three private inholdings along Beaver Creek. In Alternative E, airboats, hovercraft, and personal watercraft will also be allowed. The 15 hp restriction will moderate the use of these watercraft as well. However, hovercraft operating with smaller than 15 hp motors are currently available as kits and development of a 15hp personal watercraft during the life of the plan may not be out of the question. Utilization of airboats, hovercraft, and personal watercraft from private inholdings on Beaver Creek is currently more likely. Use of motorboats from these inholdings is somewhat limited in extent due to shallow water, but shallow water would not be limiting for airboats or hovercraft. Use of these types of watercraft, if it did develop, could reduce use of the riparian area by moose and other wildlife, reduce use of riverside mineral licks by Dall sheep, and potentially disturb nesting birds (including bald eagles, peregrine falcons, and other raptors. (See Effects Common to All Subunits). Although numbers and extent of airboat use may be somewhat limited, the disturbance of wildlife (especially nesting birds such as Bald Eagles and waterfowl) from high sound levels (

~100–110 dB(A) at 50 ft.) could be substantial in this remote and normally quiet environment. At least three traditional bald eagle nests occur on the upper half of Beaver Creek WSR. The ability of airboats to travel outside of the river channel would also result in impacts on adjacent wetlands, including nesting birds. Wildlife could similarly be impacted by hovercraft, which are not as noisy but also have the ability to travel off the river channel. Potential impacts would be greatest near private inholdings and upper Beaver Creek (where small, <15 hp) hovercraft could potentially travel from Nome Creek and return there.

Alternative E would change OHV designations in RNAs from Closed to Limited and would allow winter snowmachine use by all users. Snowmachine use by subsistence users with a permit is allowed in Alternatives B–D. This use would create a variety of impacts described in the Wildlife and Special Designation sections of “Effects Common to All Subunits”.

Effects from Special Designations

Boundaries of three existing RNAs remain the same in all Alternatives. Primitive trail development and camping may result in slightly greater human activities in the areas and disturbance of Dall sheep, raptors, and other species. In addition, allowance of snowmachines in RNAs will also result in greater disturbance of Dall sheep and other wildlife in accessible areas, such as portions of the Mount Prindle RNA and the Limestone Jags RNA.

As in alternative C, no new ACECs are designated. But similar management provisions apply to delineated crucial caribou and Dall sheep habitat.

4.7.1.7.7. Cumulative Impacts

In addition to the cumulative effects discussed in section 4.3.1.12 Wildlife, the following cumulative effects would occur in the White Mountains Subunit. The incremental development of more and larger OHV trails and the increasing numbers, speeds, and capabilities of OHVs will incrementally add to impacts to wildlife in Alternative D and E, where crosscountry summer OHV use is allowed, and in all alternatives, where snowmachine use is allowed. OHV usage has increased greatly in recent years along with changes in technology which have increased capabilities to travel further, faster, with more comfort, and in more difficult terrain and conditions. These may change faster than anticipated in the future. Limiting OHV use to designated trails (Alternatives B and C) would greatly reduce potential impacts. Native Corporations are in some cases restricting access to their private lands. This and other restrictions of access on other lands in Alaska will likely affect use levels of BLM lands, especially in road-accessible portions. The future use of caribou calving habitats in the White Mountains by the Fortymile caribou herd could become less likely to occur because of increased development and human activity on either BLM lands or on state and private lands in the vicinity of the Steese Highway. Potential oil and gas development on Yukon Flats (and portions of the White Mountains NRA in Alternative D) and the access to support it could impact wildlife populations. Road and trail development near the White Mountains NRA may result in pioneering of new trails in the WMNRA, as well as increased use of existing trails. R.S. 2477 assertions could influence access in the White Mountains NRA, especially access to Beaver Creek. Increasing mineral development north of Fairbanks, primarily on state and private lands, could result in increased levels of human activities in the White Mountains. As non-native plant populations become more abundant and widely distributed on adjacent lands, especially the highway corridors, their spread to and establishment on BLM lands becomes more likely, especially in conjunction with climate change and in alternatives which

allow cross-country OHV use. Climate changes will result in habitats more suitable for moose, and likely less suitable for White Mountains and Fortymile caribou and Dall sheep.

4.7.2. Resource Uses

4.7.2.1. Locatable Minerals White Mountains Subunit

Summary of Effects

The White Mountains NRA is withdrawn from locatable mineral entry by ANILCA 1312(b). Known high potential areas in the southeastern portion of the subunit would be closed. These minerals and their benefits to society would remain unavailable for the foreseeable future under all alternatives.

4.7.2.1.1. Effects Common to All Alternatives

State-selected lands would remain segregated from mineral entry and location until final land title has been established. New mining operations on withdrawn lands would require a validity exam prior to approval of a Plan of Operation. All active mining operations would be required to submit a Plan of Operation if the 1,000 ton bulk sample is exceeded (43 CFR 3809.11(b)) or if using cyanide in the processing of amenable ores. Mining claim surface occupancy is guaranteed, but must remain reasonably incident to the current levels of mining activity. Bonding is required of all mining operations other than those grandfathered under 43 CFR 3809.300 and 3809.400. Reclamation of surface disturbance would be required. Undue and unnecessary degradation would remain the standard for mining operations on BLM lands. The right of reasonable access across BLM lands to unpatented federal mining claims would be assured. Cultural resources encountered during surface-disturbing activities are subject to the Antiquities Act (43 CFR 3809.420(b)(8)).

The White Mountains NRA is withdrawn from locatable mineral entry by ANILCA 1312(b) and would remain withdrawn under all alternatives. There are known high potential areas in the southeastern portion of the NRA. These minerals, the jobs they create, and their benefits to society would remain unavailable for the foreseeable future.

The portions of the White Mountains Subunit outside the White Mountains NRA, 17,000 acres, is currently closed to locatable mineral through ANCSA 17(d)(1) withdrawals and by State-selection. There are 4,000 acres of existing federal mining claims near Livengood. The BLM would continue to administer new and existing operations on federal unpatented mining claims through Notices or Plans of Operations. The potential for future exploration and development would be limited to existing mining claims. Overall mining activity would likely decrease as there are few opportunities to stake new mining claims to offset claim attrition. Only alternative D would offer a process to address these closures.

4.7.2.1.2. Alternative A

Mining closures would be retained. No new lands would be made available for the staking of new mining claims or leasing of locatable minerals.

4.7.2.1.3. Alternative B

Same as Alternative A.

4.7.2.1.4. Alternative C

Same as Alternative A.

4.7.2.1.5. Alternative D (Leasing of Locatables)

Alternative D would make locatable minerals available on 160,000 acres in the southeastern portion of the NRA under a leasing program. Opening the identified lands in the White Mountains NRA to hardrock mineral leasing under Alternative D is predicted to result in suction dredging and both large and small-scale placer mining operations which would have an economic effect. The leasing program would be limited in scope, however, and some high and medium potential lands would still be unavailable.

Economic impacts associated with a leasing program are discussed in more detail in Appendix M.3.2.11 Supplement to the Draft RMP and in section 4.7.4.1 Economic Impacts White Mountains.

4.7.2.1.6. Alternative E (Proposed RMP)

Same as Alternative A, except withdrawals would be revoked on 4,000 acres near Livengood. This would have minimal effect as these lands are currently staked with valid federal mining claims. If existing claims went null and void, however, there would be an opportunity to stake new claims. If the withdrawal was removed, the requirement for a validity exam would no longer apply, reducing costs for the claim holder.

4.7.2.1.7. Cumulative Impacts

Under Alternatives A, B, C, and E, the only mining that would occur on BLM lands are the existing claims and operations near Livengood. If a large-scale hard rock mine near Livengood becomes a reality, increased exploration on the nearby federal claims would be possible, especially if infrastructure is improved.

Under Alternative D, an additional 160,000 acres would be available for mining through a leasing program.

Impacts to locatable minerals that are individually minor may cumulatively reduce exploration and production of commodities from public lands. Factors that affect mineral extraction and prospecting include, but are not limited to, such things as permitting and permitting delays, regulatory policy, public perception and concerns, travel management, transportation, mitigation measures, proximity to sensitive areas, low commodity prices, taxes, and housing and other necessities for workers. Many of these issues are issues over which the BLM has no control. Most of these issues result in additional costs or permitting delays that can individually or cumulatively impact projects.

Public lands that currently have no access could reduce the amount of mineral exploration and development that may occur. Mineral resources on non-BLM lands may not be developed if the adjacent public lands are withdrawn from mineral entry as it may not be economically feasible to develop a deposit if only a portion of the deposit is available for development.

This entire subunit would be restrictive to locatable minerals, as existing claims present the only mining opportunity on BLM lands, other than a very limited leasing program in Alternative D. This further affects the mining community as markets for new commodities have developed, ore deposit theory has advanced significantly, and new mining and milling processes that are less expensive, more efficient and environmentally friendly have been developed since the ANCSA 17(d)(1) withdrawals were enacted in the early 1970s.

4.7.2.2. Recreation White Mountains Subunit

Summary of Effects

Proper resource management, including site-specific measures to protect healthy, functioning watersheds, riparian areas, and associated fish and wildlife habitats, would result in short- and long-term, beneficial impacts to fish and game related recreation use.

Special designations and management applied to these areas, including RNAs, ACECs, and WSRs, would further protect the region, potentially increasing wildlife numbers that benefit wildlife viewing, hunting, and fishing opportunities. Proposed management in ACECs and WSRs would encourage recreation activities of a more non-motorized, Semi-Primitive nature. As the size and scope of these special designations increase, opportunities for non-motorized forms of recreation would also increase. Negative effects from these designations would also arise, if additional restrictions were placed on OHV use and other recreational activities.

The delineation of recreation management areas (SRMA) would protect and enhance recreational resources while encouraging specific targeted outcomes in these areas. Land, water, and snow based activities would continue to remain the focus in these designations, including the commonly conducted activities of boating and river based recreation, camping, fishing, hunting, gathering of edible plants and berries, hiking and backpacking, hobby mineral collecting, OHV use (both summer and winter), skiing, dogmushing, and other forms of winter recreation.

Alternative C best meets the goal of providing for multiple recreation use, while sustaining the recreation-resource base and other sensitive resource values of the region. Alternative B emphasizes less motorized recreation use in a more primitive setting, while Alternative D and E offers more motorized recreation use and includes the most acreage for cross-country OHV travel.

Table 4.20. Comparison of Recreation Indicators: White Mountains Subunit

Indicator	Alternatives			
	B (acres)	C (acres)	D (acres)	E (acres)
Special Recreation Management Area	1,016,000	1,016,000	1,016,000	1,016,000
Other BLM-managed lands	4,000	4,000	4,000	4,000
Recreation Setting Character Class (acres)				
Primitive	26,000	26,000	12,600	26,000
Semi-Primitive	483,000	171,000	69,000	171,000
Backcountry	140,000	382,000	445,000	382,000

Indicator	Alternatives			
	B (acres)	C (acres)	D (acres)	E (acres)
Middlecountry	329,000	398,000	452,000	398,000
Frontcountry	38,000	38,000	38,000	38,000

4.7.2.2.1. Effects Common to All Alternatives

Effects from Cave and Karst

Cave and Karst Resources located in the White Mountains Subunit are within the Limestone Jags RNA. These resources are currently protected through the established RNA. The Limestone Jags RNA does not change throughout the alternatives and would be managed for a Primitive recreational opportunity setting in Alternatives B, C, D, and E. The recreational niche for the RNA is to remain undeveloped. Motorized use is excluded and limited recreation development is expected. Management of this area would provide opportunities for a primitive recreational experience for visitors to the area.

Effects from Wildlife

Wildlife goals of protecting and enhancing wildlife populations and crucial habitat areas would impact recreation. Through avoidance areas and other restrictions on recreational development (including possible seasonal or timing closures, location changes, and limiting the extent of activities or development), restrictions to address wildlife concerns could make certain projects more costly, more difficult if not impossible to accomplish, or unable to meet recreation management objectives. Healthy wildlife populations would benefit hunting, wildlife viewing, and trapping which are all generally secondary activities in most RMZs. Access restrictions could offset that benefit by limiting participation in those activities. The biggest impacts to recreation from wildlife would be in limiting potential motorized and non-motorized recreational opportunities and possibly limiting further development of the winter cabin/trails program.

The prohibition on the use of domestic goats, sheep, and camelids in Dall sheep habitat, under Alternative B and E, could impact recreation use by users seeking to use these animals as pack animals as part of their recreation experience. It is anticipated that this is a small user group and effects would be minimal, but interest has been growing in the lower 48 states.

Effects from Lands and Realty

Impacts or benefits from the lands and realty program would be limited under all alternatives. Few land use authorizations are anticipated in the White Mountains NRA that would not be recreation related. Recreation related authorizations would be consistent with recreation setting prescriptions.

Two transportation corridors are designated in Alternative A, one of these would be retained in Alternative B and D, and none would be retained in Alternatives C, and E. Although the designation of corridors varies across alternatives, effects would not because few rights-of-way are anticipated, other than those for recreation related trails developed by the BLM. Additionally rights-of-way are not precluded outside of the transportation corridors, thus designation of corridors in Alternatives A and B would not prevent future approval of rights-of-way in other parts of the White Mountains NRA.

Effects from Locatable Minerals

There would be no effect from locatable minerals on recreation. Entry for locatable minerals is currently closed and would remain so in all alternatives. Although there are valid existing claims in the Livengood area that may be developed, these affect only 4,000 acres, surrounded by state lands. Recreational use of these lands is minimal due to ongoing mineral exploration. Over the long-term, these lands are not likely to remain under BLM management.

Effects from Recreation

Under all alternatives, management actions would continue to provide for multiple recreation uses, including a wide-range of structured opportunities that produce specific targeted outcomes (such as activities, experiences, benefits, and settings). Beaver Creek WSR (111 miles) would continue to be managed to preserve and enhance resource values. Approximately 1,016,000 acres in the White Mountains NRA and adjacent facilities (e.g., Fred Blixt Cabin, Cripple Creek Campground, and trailheads) would be managed to enhance and promote recreational opportunities. Together, these actions would directly affect recreation management by ensuring that land and water based recreation opportunities continue to exist.

Special Recreation Permits would continue to be issued as appropriate for commercial, competitive, and special event use, allowing managers to provide for safe and enjoyable recreation opportunities at fair and allowable levels. This would minimize user conflicts while ensuring that recreation activity levels do not negatively impact the recreation-resource base and other sensitive resource values of the region.

Opportunities for both developed and dispersed recreational use would exist in all alternatives. Current developed recreation sites would continue to be managed to enhance recreation experiences, provide for health and safety issues, and to help mitigate other possible resources at risk. The entire subunit would remain open to dispersed camping, except in areas where specific restrictions or exclusions are in place to meet other resource objectives. Under all alternatives, winter use (October 15 to April 30) of snowmobiles would be allowed, with adequate snow cover, providing opportunities for recreational users during winter months. During the summer months, all forms of non-motorized use would generally be allowed, except to protect specific resource values, preserve public safety, and maintain identified recreation opportunities.

Effects from Travel Management

Under all alternatives, travel management actions would continue to provide for a range of motorized and non-motorized recreation experiences, while protecting resource values and minimizing user conflicts. This comprehensive approach to travel management would allow the BLM to sustain and enhance recreation opportunities and experiences, visitor access and safety, and resource conservation of the subunit throughout all alternatives. All forms of non-motorized use would be allowed, providing users with opportunities for float boating, hiking, biking and horseback riding. Winter use (October 15 to April 30) of snowmobiles would be allowed, with adequate snow cover except in the RNAs (12,600 acres) where different rules would apply in Alternatives B, C and D. This would provide additional opportunities for recreational users during the winter months. Impacts to soils, water, and vegetative resources could affect both motorized and non-motorized winter recreational use by leaving certain trails rutted and in poor condition. Depending on use levels and degradation of natural resources, additional closures for summer OHV use could be put in place for specific trails or areas.

The use of aircraft would also be allowed, subject to reasonable provisions to protect the values of the Beaver Creek WSR and designated RNAs.

4.7.2.2.2. Alternative A (No Action)

Effects from Forest and Woodland Products

Effects of forest products on recreation are expected to be minimal. Under Alternative A, the White Mountains NRA is open to all forest products except commercial timber. Possible impacts that could occur would primarily be to the visual quality. Interest in harvesting would most likely occur along roads and at recreational sites like campgrounds and cabins. Unless properly stipulated and managed for, issuance of permits for timber or forest products could significantly impact certain recreational sites and recreation setting prescriptions such as naturalness. The issuance of permits for forest products, such as berries and mushrooms, to commercial pickers could also impact recreational users of that resource. This impact would most likely only occur in readily accessible areas frequented by the recreational users, such as Nome Creek valley.

Effects from Leasable Minerals

There would be no effects from Leasable Minerals as the entire subunit is withdrawn from mineral leasing.

Effects from Salable Minerals

No effects from salable minerals are expected. Although the entire NRA is available, demand for and reasonable access to material sites in the White Mountains Subunit is very limited. Currently some BLM lands outside the NRA may not have the same protection from development as lands inside the NRA.

Effects from Recreation

Effects would be the same as those discussed under the Effects Common to All Alternatives above. Although the existing Steese RMP (BLM 1986a) did not specifically identify any SRMAs, the BLM essentially manages the White Mountains NRA and Beaver Creek WSR Corridor as a SRMA. Facility enhancements (e.g., cabins, trails, trailheads, and toilets) may be added to accommodate increasing recreational demand. All public lands outside this SRMA would be managed for custodial recreation actions only, and would result in few if any, recreational improvements.

Effects from Travel Management

In addition to those effects discussed under the Effects Common to All Alternatives above, the following effects would occur. Summer motorized travel within the White Mountain NRA and associated lands would be open to use of vehicles 1,500 pounds GVWR and less, except in Primitive and Semi-Primitive non-motorized zones and in other administratively closed areas. Allowing this level of continued OHV use may not be addressing resource and user conflict issues and could result in additional emergency closures to protect the recreation resource base and other sensitive resource values of the region. These actions could result in long-term detrimental impacts to scenic viewsheds that enhance the quality of recreational experiences for other recreation users. Thus, while this alternative would offer greater allowances for recreational activities that involve the use of motorized travel, including hunting and ATV riding; fewer opportunities would exist for recreational users seeking a primitive, non-motorized type of experience. . The 1,500 pounds GVWR has been confusing to the public and difficult to enforce with the changing technology and because this information isn't always readily available.

Effects from Special Designations

The Beaver Creek WSR (111 miles) would continue to be managed to preserve and enhance its resource values, providing long-term, beneficial impacts to those recreation users seeking land and water based recreation activities in the region. Three designated RNAs totaling 12,600 acres, Serpentine Slide, Limestone Jags, and Mount Prindle, would be managed for a Primitive setting in all alternatives. The RNAs would remain closed to all forms of motorized use under this alternative. This would continue to provide for a primitive recreation experience and protect the values for which the RNAs were designated. If use increased to a high enough level that resource damage occurred, affected areas could be closed to recreational use, however, this is unlikely due to the distance from the highway system and relative inaccessibility to OHVs during the summer.

4.7.2.2.3. Alternative B

Effects from Wilderness Characteristics

Maintenance of wilderness characteristics on 509,000 acres (fifty percent) would help ensure that opportunities for a primitive and unconfined recreation experience would remain available for present and future recreation users. Maintenance of wilderness characteristics does not eliminate the ability to develop facilities such as trails or cabins though the process will be more stringent as to need, how they are located, that they blend in to the natural landscape, and that the development does not change the experience defined in the RMZ.

Effects from Forest and Woodland Products

There would be no effects under this alternative. The White Mountains SRMA would be closed to all forest uses and lands outside the SRMA (4,000 acres) are mining claims.

Effects from Leasable Minerals

Same as Alternative A.

Effects from salable Minerals

No effects would be expected. The Primitive, Semi-Primitive, and Backcountry RMZs (649,000 acres) would be closed to salable minerals and any sales in the remaining areas would be discretionary. More protections would be afforded BLM-managed lands within the SRMA than under Alternative A.

Effects from Recreation

Effects would be similar to those discussed under the Effects Common to All Alternatives above. Additionally, the BLM would continue to manage the Whites Mountains SRMA (1,016,000 acres) under Alternative B. The remaining BLM lands (4,000 acres) would be managed for custodial recreation only. This alternative adds the use of Benefits Based Management to set prescription settings and delineate RMZs. The SRMA would include seven different RMZs (Map 53) representing five different RSC settings including: Primitive (26,000 acres), Semi-Primitive (483,000 acres), Backcountry (140,000 acres), Middlecountry (329,000 acres), and Frontcountry (39,000 acres).

When compared to the other alternatives, a much greater portion of the SRMA would be reserved for Semi-Primitive experiences of non-motorized use. Facility and other development could be

limited to maintain Semi-Primitive setting prescriptions. These management decisions would affect recreation by providing high-quality recreation opportunities for those users who desire an experience characterized by solitude, tranquility, and self-reliance. Motorized users could experience some displacement with potential motorized closure areas or increased restrictions.

The RNAs would be limited to subsistence use of snowmobiles in the winter, with adequate snow cover, by free-use permit, for pursuit of subsistence resources. The RNAs would be closed to all other motorized use. There would be some conflict associated with this use. Existing snowmobile tracks into the RNAs will entice non-qualified users to travel into the RNAs which would create additional impacts to the resources from trenching through the snow and tearing vegetation, hill climbing, and disturbing non-motorized users that expect a primitive experience as prescribed for in the recreation management objectives. Conflict would occur between user groups when one group is allowed access to an area while another group is not allowed access to the same area by the same means.

Effects from Travel Management

Under Alternative B, few impacts would be expected to occur within the Semi-Primitive, and Backcountry RMZs. Within these zones, travel allowances and restrictions would be similar to those currently in place under Alternative A. The primary effects of travel management on recreation would be in the Middlecountry and Frontcountry RMZs (367,000 acres) where new restrictions to motorized use would occur. Motorized use in these zones would change from unlimited cross-country travel by OHVs weighing 1,000 pounds curb weight and less during summer months to the same machines being limited to designated trails. Although most summer OHV use occurs on trails that would be designated for use, OHV opportunities for cross-country uses, including exploring and hunting, would become unattainable. It is expected that fewer impacts would occur to soil, water, and vegetative resources, which should in return enhance scenic viewshed qualities and other non-motorized recreational opportunities. On the other hand it is difficult terrain to build trails sustainable for use of OHVs in the summer over the entire length of the trail. Mud holes develop making it nearly impossible for OHVs to stay on the trail. This can make for a difficult management strategy; trying to force individuals to stay on a trail that is almost impossible to do so.

By a free-use permit only, RNAs would be limited to cross-country use of snowmobiles weighing 1,000 pounds and less, 50" width and less and with adequate snow cover to federally qualified subsistence users. The permit would not carry any stipulations. The permit would be required mainly for law enforcement to differentiate between a legal subsistence user and someone who is not. This is a major change to previous management which had the RNAs closed to all forms of motorized use. The change could have moderate benefits to some by allowing an additional 12,600 acres of additional area (1.2 percent increase) to pursue subsistence resources and to those that are capable of riding snowmobiles in this steep terrain. However, due to the steep terrain, and wind-blown areas clear of snow, conditions typical of the RNAs in the White Mountains NRA, significant impacts could occur from the use of snowmobiles. Due to the steepness and wind-blown conditions, snowmobiles will cut through the snow to the vegetation and tear through the vegetation. The trenches cut through the snow create troughs that will channel water and create erosion ditches, further impacting soil and vegetation. The compaction of the snow creates an impervious condition that unnaturally channels water during spring run-off. Snowmobiles will also carry weeds that would compete with the natural vegetation. The RNAs were designated because they contain examples of significant natural ecosystems to be preserved for scientific

study. Allowing such use would alter the terrain, vegetation and ecosystems for which they were designated.

Effects from Special Designations

Under Alternative B, effects from RNAs and management of Beaver Creek WSR would be the same as Alternative A except that Outstandingly Remarkable Values (ORVs) of Beaver Creek would be identified as scenic, recreation, geologic, fisheries, and wildlife, and RNAs would be limited to subsistence use of snowmobiles by permit. Subsistence use of snowmobiles would negatively impact the RNAs for the purposes in which they were designated as described above. Identification of ORVs would enhance management of Beaver Creek and provide long-term, beneficial impacts to those recreation users seeking land and water based recreation activities.

One eligible river segment, Fossil Creek, would be recommended as suitable for designation as a “scenic” under the Wild and Scenic Rivers Act. If it were designated by Congress, the effect of its inclusion into the NWSR would ensure the protection and enhancement of the outstanding and remarkable scenic and geologic values for which it is identified, providing long-term, beneficial experiences for those individuals seeking scenic and natural landscapes and wanting to experience adventure.

Approximately 589,000 acres would be designated as the White Mountains ACEC to protect caribou and Dall sheep habitat. This ACEC designation would maintain or protect wildlife habitat, potentially increase wildlife numbers that have beneficial impacts on wildlife viewing and hunting. Negative effects of ACEC designation may also result, if additional restrictions are placed on OHV and other recreational activities.

4.7.2.2.4. Alternative C

Effects from Wilderness Characteristics

Maintenance of wilderness characteristics on 312,000 acres (thirty-one percent) would help ensure that opportunities for a primitive and unconfined recreation experience would remain available for present and future recreation users. Maintenance of wilderness characteristics does not eliminate the ability to develop facilities such as trails or cabins though the process will be more stringent as to need, how they are located, that they blend in to the natural landscape, and that the development does not change the experience defined in the RMZ. The area identified to maintain wilderness characteristics is largely outside the current development of cabins and trails.

Effects from Forest and Woodland Products

Same as Alternative A except all timber harvest including personal use would be prohibited on 82,000 acres within the Beaver Creek WSR Corridor and the RNAs. The harvest of special use forest products such as berries and mushrooms would be allowed everywhere except RNAs. Visual impacts from timber harvest could occur in all RMZs except Beaver Creek and the RNAs potentially threatening the setting prescriptions.

Effects from Leasable Minerals

Same as Alternative A.

Effects from Salable Minerals

Under Alternative C, only the Beaver Creek WSR Corridor (69,000 acres) would be closed to development of salable minerals. Development of salable minerals in any of the Primitive, Semi-Primitive, or Backcountry RMZs could have a considerable impact on the setting prescriptions for these RMZs. It is unlikely that any development would occur, however, based on past interest, the lack of BLM lands along the highways, and the lack of reasonable access.

Effects from Recreation

Effects would be similar to those effects discussed under the Effects Common to All Alternatives above. This alternative is very similar to Alternative A, with the addition of utilizing Benefits Based Management to set prescription settings and delineate RMZs. As in Alternative B, the White Mountains SRMA (1,016,000 acres) and other BLM-managed lands (4,000) acres would be identified. The SRMA would include seven different RMZs (Map 54) representing five different RSC settings including: Primitive (26,000 acres), Semi-Primitive (171,000 acres), Backcountry (382,000 acres), Middlecountry (398,000 acres), and Frontcountry (39,000 acres).

A shift has been made, from Alternative B, away from Semi-Primitive towards more Backcountry and Middlecountry setting prescriptions. The effect of this shift would allow for a slightly higher level of modest site and facility development to enhance recreational opportunities. Through these recreational enhancements some displacement of traditional non-motorized users could be expected, but on the other hand both motorized and non-motorized recreational use, in general, would be expected to benefit from developments or improvements. Use would be expected to increase and a more moderate level of attainment anticipated for experiencing solitude, tranquility, and personal challenge and risk-taking.

Effects from Travel Management

Under Alternative C, the impacts from travel management on recreation would be nearly the same as Alternative B with a few exceptions. These exceptions would include allowing off-trail travel for the retrieval of legally harvested game within the Middlecountry and Frontcountry RMZs (438,000 acres), with the same weight restrictions as in Alternative B, and allowing the use of somewhat larger UTV type vehicles on two trails where they are currently restricted (Map 54). These changes would greatly increase the ability of hunters to utilize the White Mountains for those recreational purposes. The ability to use the UTV type vehicles even on two trails would significantly increase the range of allowed motorized opportunities. As in Alternative B, it is expected that by generally limiting summer cross-country travel by OHVs, fewer impacts would be expected on soil, water, and vegetative resources; and helps maintain the scenic quality of viewsheds and opportunities for non-motorized recreational activities.

The three RNAs would be opened to subsistence use of snowmobiles in the winter, by free-use permit. Impacts would be the same as described in Alternative B.

Effects from Special Designations

Under Alternative C, the effects from RNAs would be the same as Alternative A. Effects from management of Beaver Creek WSR would be the same as Alternative B. No White Mountains ACEC would be designated under Alternative C. Although no ACEC would be designated, decisions for management of wildlife common to all action alternatives and habitat protections afforded by the designation of the White Mountains NRA under ANILCA, would protect wildlife resources, benefitting wildlife related recreation.

4.7.2.2.5. Alternative D

Effects from Wilderness Characteristics

Maintenance of wilderness characteristics on 205,000 acres (twenty percent) would help ensure that opportunities for a primitive and unconfined recreation experience would remain available for present and future recreation users. Maintenance of wilderness characteristics does not eliminate the ability to develop facilities such as trails or cabins though the process will be more stringent as to need, how they are located, that they blend in to the natural landscape, and that the development does not change the experience defined in the RMZ. The area identified to maintain wilderness characteristics is largely outside the current developed area except for Beaver Creek WSR.

Effects from Forest and Woodland Products

Same as Alternative C.

Effects from Leasable Minerals

Impacts to recreation from leasable minerals could potentially occur. Approximately forty-four percent of the SRMA would be opened to mineral leasing. The area to be opened is the White Mountains Foothills Middlecountry RMZ (451,000 acres). The niche for this RMZ is to provide for winter recreation opportunities through a more highly developed cabin/trail system. Desired outcomes include escaping social pressures and crowds, and enjoying scenery and natural landscapes. Development of leasable minerals could affect these desired outcomes by diminishing them. No exploration or development of leasable minerals is anticipated, however, during the life of the plan due the low development potential for these minerals.

Effects from Salable Minerals

Effects would be the same as Alternative C, except that Beaver Creek WSR Corridor (69,000 acres) would be open to salable minerals.

Effects from Recreation

Effects would be similar to those discussed under the Effects Common to All Alternatives above. As in Alternative B, the White Mountains SRMA (1,016,000 acres) would be identified and Benefits Based Management would be used to set prescription settings and delineate RMZs. The White Mountains SRMA would consist of six different RMZs representing five different RSC settings including: Primitive (12,600 acres), Semi-Primitive (69,000 acres), Backcountry (445,000 acres), Middlecountry (452,000 acres), and Frontcountry (39,000 acres).

Under Alternative D, the only lands managed for Primitive and Semi-Primitive experiences would be the Beaver Creek RMZ and the RNAs. The Primitive and Semi-Primitive settings would be reduced by fifty to sixty percent compared to Alternative C. The long-term effects of Alternative D would allow more significant recreational development in the northern part of the SRMA. The omission of the Highlands Semi-Primitive RMZ and the fifty percent reduction in size of the Primitive RMZ would not be expected to have any real impact on non-motorized type recreational opportunities since very few are occurring now and little more would be forecast in the future. With both Middlecountry and Backcountry RMZs covering the northern portion of the SRMA future cabin and trail development could offer a much expanded version of the current cabin and trail system.

Effects from Travel Management

The effects of Travel Management on recreation would be fairly similar to Alternative A with a few exceptions. In Alternative D, summer cross-country travel by ATVs would be allowed in the Middlecountry RMZs (451,000 acres), with vehicles weighing 1,000 pounds curb weight or less. Alternative A also allows for cross-country travel with similar restrictions, but the size of the Middlecountry RMZ in Alternative D, in which cross-country use can occur, increases by about five percent. New portions of the northern and northwestern White Mountains SRMA would be opened to limited cross-country travel. In addition, UTV type vehicles would be allowed on numerous designated trails within the Middle and Frontcountry RMZs. Opportunities for motorized activities would be greatly enhanced. These decisions could potentially diminish the recreational experience of users seeking a primitive, non-motorized type of outing. Impacts to soils, water, and vegetative resources could also affect both motorized and non-motorized winter recreational use by leaving certain trails rutted and in poor condition. Depending on use levels and degradation of natural resources, additional closures for summer OHV use could be put in place for specific trails or areas.

Effects from Special Designations

Same as Alternative C.

4.7.2.2.6. Alternative E (Proposed RMP)

Effects from Wilderness Characteristics

Maintenance of wilderness characteristics on 205,000 acres (twenty percent) would help ensure that opportunities for a primitive and unconfined recreation experience would remain available for present and future recreation users. Maintenance of wilderness characteristics does not eliminate the ability to develop facilities such as trails or cabins though the process will be more stringent as to need, how they are located, that they blend in to the natural landscape, and that the development does not change the experience defined in the RMZ. The area identified to maintain wilderness characteristics is largely outside the current developed area except for Beaver Creek WSR.

Effects from Forest and Woodland Products

Same as Alternative C.

Effects from Leasable Minerals

Impacts to recreation from leasable minerals could potentially occur. Approximately forty-four percent of the SRMA would be opened to mineral leasing. The area to be opened is the White Mountains Foothills Middlecountry RMZ (451,000 acres). The niche for this RMZ is to provide for winter recreation opportunities through a more highly developed cabin/trail system. Desired outcomes include escaping social pressures and crowds, and enjoying scenery and natural landscapes. Development of leasable minerals could affect these desired outcomes by diminishing them. No exploration or development of leasable minerals is anticipated, however, during the life of the plan due the low development potential for these minerals.

Effects from Salable Minerals

Effects would be the same as Alternative C, except that Beaver Creek WSR Corridor (69,000 acres) would be open to salable minerals.

Effects from Recreation

Under Alternative E the delineations of Recreation Management Zones would be the same as described in Alternative C with one use exception. The entire SRMA (1,020,000 acres) would be open to the use of snowmobiles with adequate snow cover, including within the RNAs. The acreages would remain the same in each RMZ as in Alternative C. Use levels would be similar to Alternatives A and D except that opening of previously closed areas will attract some increased use in those areas as well as increased use overall. There would be some conflict with the allowance of snowmobiles in the RNAs because the management prescription for the RNAs is Primitive. It is difficult to manage for a primitive recreation experience when the area is open to the use of motorized vehicles. The two are not compatible.

Effects from Travel Management

Under Alternative E, the White Mountains subunit would be managed similarly to Alternative A. The current supplemental rules will apply including: management of non-motorized trails, use limitations on the Wickersham Creek Trail and 15 hp limitation for launching boats in the Nome Creek Valley.

The limitation of OHVs in the summer and winter from 1,500 pound GVWR would change to 1,000 pound curb weight to make it more discernable to the public and to law enforcement. There will also be a width restriction of 50" or less. Cross country travel will be allowed.

UTVs, 1,500 pound curb weight, 64" and less, would be allowed on designated trails only, specifically on the Wickersham, Trail Creek and 23.5 mile trails to Lee's cabin and on the Quartz Creek Trail. UTVs would also be allowed within the Nome Creek tailings area. UTV's would not be allowed off trail except as described above. Additional trails could be added to the designated trail system in the future as identified in a travel management plan.

Licensed highway vehicles, including motorhomes and UTVs 1,500 pound curb weight and 64" and less, would continue to be allowed within the Nome Creek tailings area. Travel off the tailings is not allowed by the aforementioned vehicles other than on the Nome Creek Road.

The use of airboats and hovercraft would be allowed on Beaver Creek WSR which had previously been prohibited. This would create conflict with float boaters who are expecting a primitive experience as is a typical expectation for a nationally designated "Wild" river. Airboats and hovercraft are more amphibious in nature than a motorboat, so there would be some impacts to resources where these craft travel off of the water and onto land. For more of a description of impacts see the Travel Management section under Alternative B.

The prohibition for the use of airboats and hovercraft on Beaver Creek WSR would be lifted under Alternative E. There will be some conflicts associated with the use of these craft as Beaver Creek WSR is designated as "wild.". The river is noted for its primitive character and is mostly a one way, float boat river. It narrows in places to less than 12 feet in width, narrower in some areas due to overhanging sweepers, and can be extremely shallow during the middle of the summer. Often float boats will have to drag across shallow riffles. There are a few outboard motorboats that operate on the river, mainly from private inholdings along the river in 3 locations. They generally are on the river during the moose hunting season, and only travel a few miles up and downstream of their inholding due to shallow water. Hovercraft and airboats can go over the shallowest of water, over gravel bars and up on the banks off the river. Airboats and hovercraft are more amphibious in nature than an outboard motorboat. There would be some safety concerns

for float boaters that are travelling one way, and it will be difficult for them to get out of the way of motorized traffic. Airboats and hovercraft have to travel with some speed to be maneuverable which can be dangerous to float boaters. Once the Airboat falls off step, it would be difficult to get back on step in shallow water. Every marsh and swamp adjacent to the river could have airboat and hovercraft traffic on them, especially during moose hunting season. The marshes will be targeted for access to these craft; trees will be cut to make trails to access the marshes, and vegetation will be compacted and torn. There are few limitations to where airboats and hovercraft can travel as long as it isn't too steep of terrain.

There is a 15 hp limit for launching boats in the Nome Creek Valley, so airboats and hovercraft will have to come up from the Yukon River, almost 200 miles to reach the portion of Beaver Creek that is designated as a WSR. It is unlikely that many will attempt to travel this distance. It is more likely that individuals with private inholdings along the river would attempt to get airboats or hovercraft to their property to expand their range along the river corridor. It is likely that allowing additional motorized craft on the river that attempts to travel the shallow narrow channels will result in boats getting stuck, broken down and abandoned on the river.

Noise from airboat and hovercraft use is in the range of 90 – 108dbA, similar to chainsaws at 110 dbA, and rock concerts 110 – 120 dbA. Noise levels of these types of craft will have a negative effect on recreational float boaters.

The potential exists for summer use of OHVs within the Backcountry and Semi-Primitive RMZs, however, these decisions will be deferred to the travel management plan. The impacts of allowing this use will be analyzed in the travel management plan as well.

Management prescriptions in crucial caribou and Dall sheep habitat include limitations to OHV use, potentially reducing opportunities for motorized use in these areas.

The Limestone Jags, Serpentine Slide and Mount Prindle RNAs include limitations to OHV use. The OHV area designation would change from closed to limited. The RNAs would be limited to winter use of snowmobiles 1,000 pounds curb weight and less and 50" and less in width. .

Effects from Special Designations

Under Alternative E, effects from RNAs and management of Beaver Creek WSR would be the same as Alternative A except that Outstandingly Remarkable Values (ORVs) of Beaver Creek would be identified as scenic, recreation, geologic, fisheries, and wildlife, and snowmobile use in the RNAs would be allowed. Subsistence use of snowmobiles would negatively impact the RNAs for the purposes in which they were designated as described above. Identification of ORVs would enhance management of Beaver Creek and provide long-term, beneficial impacts to those recreation users seeking land and water based recreation activities.

Approximately 417,000 acres would be delineated as crucial caribou and Dall sheep habitat and management applied to minimize impacts to these habitats. The management of these areas would maintain or protect wildlife habitat, potentially increase wildlife numbers that have beneficial impacts on wildlife viewing and hunting. Negative effects may also result, if additional restrictions are placed on OHV and other recreational activities.

4.7.2.2.7. Cumulative Effects

The effects of past, present and future actions, including the demand for recreational use, changes to the landscape as a result of surface-disturbing activities, and area closures or restrictions for resource protection, could affect recreation management in the White Mountain Subunit. Implementing any of the alternatives would not contribute to a significant cumulative change to recreational opportunities on public lands.

The demand for recreational use in the subunit is anticipated to increase by ten to fifteen percent over the life of the plan, due to general population increases and increases in recreation-related technology. This use would occur for both motorized (such as OHV use, including snowmobiles) and non-motorized (such as hiking, backpacking, hunting, float-boating, river-based recreation, camping, fishing, and gathering of edible plants and berries) activities, resulting in an increase in resource damage and conflicts among recreationists involved in these activities.

Surface disturbances resulting from forest sales and unmitigated OHV use could cumulatively affect recreational users if activities were concentrated in heavily recreated areas and if activities overlapped in duration. Effects to recreation as a result of these cumulative effects may include the potential dislocation of wildlife for hunting and viewing purposes, and/or the alteration of scenic viewsheds. These effects would be greatest in Alternatives A, D and E and lower or minimal in Alternatives C and B.

Special designation, including RNAs and WSRs, would further protect the White Mountains Subunit, by maintaining healthy populations of wildlife that benefit wildlife viewing, hunting, and fishing opportunities. As the size and scope of these areas increase in Alternatives B and C, opportunities for land- and water-based recreation uses that incorporate scenic viewsheds as part of the experience would also increase. As areas that require special management attention are identified to prevent irreparable damage to historic, cultural and scenic values, the need for additional restrictions could limit OHV use and other recreational activities. The RNAs would be opened to winter use of snowmobiles which could create some irreversible impacts to soil and vegetation, and reducing the quality of future scientific study for which the areas were designated.

Leasing of locatable minerals in Alternative D would have some long term cumulative effects. Indirect and cumulative impacts from the activities and infrastructure associated with mining activities and exploration include the related travel and access to lease locations as well as the increase of recreational users accessing these new access routes. Access routes to leases could benefit other users if trails were constructed in the proper locations and use sustainable trail construction techniques. Cross-country travel is allowed under alternative D, however, the addition of more concentrated routes with multiple passes over the same area would compact the soil and vegetation and create a permanent scar on the landscape. User-created trails or routes created by four-wheelers are not typically sustainable because they tend to go straight up and straight down hills, which creates a path for water to accelerate and intensify erosion. User-made trails deteriorate over time. Direct and cumulative effects of this action on recreation and travel management are discussed in detail in M.3.2.9.

4.7.2.3. Travel Management White Mountains Subunit

Summary of Effects

Transportation and travel management affects the number of users able to reach and travel on public lands. The primary cause of effects on or changes to the transportation network is resource protection. Measures that are implemented to protect natural resources, such as wildlife, water, and soil could result in seasonal or permanent route restrictions or closures. Permitted activities on BLM-managed lands, such as those related to minerals, could slightly expand the route network.

Alternative C would best manage travel, roads, and trails to provide access and recreational opportunities, while minimizing resource impacts and user conflicts. Alternative B is most restrictive to OHV use. Alternatives A and D have the most potential for resource impacts because of fewer limits to OHV use. Table 4.21, "White Mountains: Comparison of OHV Designations" identifies the indicators that were used to analyze effects on transportation and travel management under each alternative.

Table 4.21. White Mountains: Comparison of OHV Designations

Area Designation	Alternative									
	A		B		C		D		E	
	Acres	%*	Acres	%*	Acres	%*	Acres	%*	Acres	%*
Year-round										
Undesignated	4,000	<1	0	0	0	0	0	0	0	0
Open	0	0	0	0	0	0	0	0	0	0
Closed	12,600	1	12,600	1	12,600	1	12,600	1	0	0
Limited	1,004,000	98	1,008,000	99	1,008,000	99	1,008,000	99	1,020,000	100
Winter (October 15 through April 30)										
Limited: Cross-country use of vehicles 1,500 pounds GVWR and less allowed in Alternative, A, 1,000 pounds curb weight in Alts. B – E.	1,004,000	98	1,008,000	99	1,008,000	99	1,008,000	99	1,020,000	100
Summer (May 1 through October 14)										
Limited: Cross-country use of vehicles 1,500 pounds GVWR and less allowed in Alternative, A, 1,000 pounds curb weight in Alts. B – E.	440,000	44	4,000	<1	4,000	<1	464,000	46	405,000	40
Limited: Designated routes, weight & width	0	0	367,000	36	437,000 ^b	43	31,000 ^b	3	31,000	3
Limited: Closed to summer OHV use	563,000	55	636,000	62	566,000	55	514,000	50	580,000	57

*Percent of BLM lands within the White Mountains Subunit (1,020,000 acres)

^bOff-trail retrieval of legally harvested game allowed

Table 4.22. White Mountains: Miles of trails

Trail Limitations	Alternative				
	A (miles)	B (miles)	C (miles)	D (miles)	E (miles)
Designated ATV (summer)	cross-country travel allowed	139 miles	139 miles	cross-country travel allowed	cross-country travel allowed except in Nome Creek
Designated UTV (summer)	0	0	27	112	27
Winter Trails Closed to Summer OHV use	109 miles	117 miles	117 miles	117 miles	117 miles

4.7.2.3.1. Effects Common to All Alternatives

There would be no effects to Travel Management from locatable minerals, and effects from Cave and Karst Resources and leasable minerals would be negligible. These programs are not analyzed further.

Effects from Travel Management

There are approximately 230 miles of existing BLM-managed trails within the White Mountains NRA. All BLM lands are required to be designated as Open, Closed or Limited to OHV use. No areas would be designated as Open within the White Mountains Subunit under any alternative. Limited designations would restrict motorized vehicles to either weight (Alternative A); width, weight, and designated routes (Alternatives B and C); or, width and weight (Alternative D and E). A Closed area designation would prohibit motorized vehicle travel year long. The term “summer use” refers to the period of time between May 1 and October 14. Effects would vary depending on how much a trail is used, the level of restriction placed on the trail, and whether the trail is wet or dry during a particular time of the year. Seasonal restrictions could be placed on particular trails to minimize damage to the trail.

Under all alternatives, non-motorized travel (e.g., pedestrian, equestrian, and mechanized uses such as mountain bikes) would continue on all BLM lands in the subunit (1,020,000 acres). There would be no change from current management, and opportunities would continue for visitors who access public lands by foot, horse, or bicycle.

Over-snow motorized travel (snowmobiles) would remain limited by weight and width within the White Mountains subunit, maintaining opportunities for visitors who travel by these modes of transportation. In Alternatives B, C, D and E, the weight restriction changes from 1,500 pounds GVWR to 1,000 pounds curb weight and 50” and less in width. The nomenclature changes essentially result in no change to the size and type of vehicles allowed, but is easier to determine, curb weight is typically more available within the manufacturers specifications, and is in line with rules imposed by the State of Alaska. Cross-country travel by snowmobiles is allowed under all alternatives, but is generally restricted to October 15 through April 30 when adequate snow covers the ground. The only areas closed to snowmobile use are the RNAs (12,600 acres) in all Alternatives A, B, C, and D). These RNAs are mostly inaccessible to snowmobiles regardless of designation.

Fixed-wing and helicopter access will remain largely unregulated on all BLM lands within the subunit unless specifically addressed through the development of a Recreation Activity Management Plan, ACEC/RNA management plan or through regulation.

Potential exists for minor access roads to gravel pit developments along the Nome Creek Road for maintenance purposes. Future requests for road proposals would be considered on a project-specific basis. If roads were developed, access opportunities for OHV users could increase.

Effects from Special Designations

Under all alternatives, the 111 miles of Beaver Creek WSR, as designated through ANILCA, would continue to be managed as a “wild” river pursuant to the WSRA. Management of “wild” rivers, per BLM guidance, would impact travel in Beaver Creek WSR Corridor where the construction of new roads, primitive roads, trails, or other provisions for overland motorized travel would not be permitted (BLM 8351 Manual). Beaver Creek is also designated as an anadromous fish stream. This could have impacts to travel-related decisions in the future.

4.7.2.3.2. Alternative A (No Action)

Effects from Wildlife

Under Alternative A, when land use actions are proposed, mitigating measures to avoid or minimize possible adverse effects are developed through the environmental assessment process. This sometimes results, in restriction or alteration of timing, location, and extent of a proposed land use activity in order to avoid or minimize adverse effects. Impacts to travel management include avoiding crucial wildlife habitat areas, as identified, and limiting use to specific timeframes or season of use. Areas currently open to OHV use under Alternative A generally avoid crucial wildlife habitat areas. There is a seasonal closure to motorized use to avoid peregrine falcon nesting areas, although they are no longer listed as threatened. Alternatives B and C are more restrictive to OHV use, and D is nearly the same as A.

Effects from Forest and Woodland Products

Under Alternative A, harvest of timber or other forest products would have a minimal effect on travel management. Forest products are reserved for local use only, no commercial timber harvest is permitted, and personal use of timber is allowed throughout the subunit. On the rare occasions that permits are issued, monitoring is done to ensure that the authorized harvest was not exceeded and that permit stipulations have been followed. Permit stipulations may include winter cutting and movement, maintaining a set distance from waterways, and lopping and scattering slash. Proliferation of trails or routes could occur from authorization of harvest, resulting in potential temporary closures, but stipulations for winter cutting or walk-in only would limit this impact.

Effects from Lands and Realty

There are two established transportation corridors in the White Mountains NRA (Map 19). Since the Nome Creek Road was constructed, the transportation corridor from Mile 42 Steese Highway appears redundant. There have been no ROW applications, outside of the BLM applying for ROWs on trails, for any specific uses or access and few are anticipated in the future. Acquisition of private lands within the NRA would be pursued if they become available. Lands outside the NRA including Wickersham Dome, the Cripple Creek Campground, the U.S. Creek withdrawal, and the Perhaps Creek withdrawal would remain under BLM's management. Access to three private inholdings would continue to be addressed through Title XI of ANILCA. Lands and Realty actions under this alternative would have no impact to travel management.

Effects from Recreation

The RSC setting provides a framework for identifying the types of recreation activities that the public might desire, which is directly related to transportation and travel management opportunities in those areas. The RSC setting for Alternative A would maintain approximately fifty percent (494,000 acres including Beaver Creek) of the NRA as Primitive. Under the old definition of Primitive, this area is available for non-motorized opportunities and snowmobiles, 1,500 pounds GVWR and less, in most of the area. The old Primitive class is approximately equivalent to the new Semi-Primitive and Backcountry classes (Table 2.5, "Recreation Setting Character Matrix for the Eastern Interior Planning Area") Approximately forty-eight percent of the NRA (482,000 acres Semi-Primitive Motorized) is classified as "limited" for motorized opportunities (1,500 pounds GVWR and less) and also allows a wide variety of recreation uses and activities including non-motorized activities. Since travel management decisions are applied to the same management units as the recreation setting character, impacts from recreation are expected to be minimal.

Effects from Travel Management

The current OHV designation for the White Mountains Subunit is Limited except for RNAs, which are Closed to OHV use (Map 48). Some trails are managed as non-motorized recreation trails and are closed to motorized use. This benefits non-motorized trail users by providing a place where only non-motorized use is allowed and not shared, but also limits motorized users' opportunities to travel in the same areas. Cross-country use of OHVs 1,500 pounds GVWR and less are allowed in the Semi-Primitive management zone. Cross-country use of snowmobiles is allowed except in closed areas. The use of GVWR for applying weight limitations has been confusing to the public and difficult to enforce as many manufacturers of OHVs do not necessarily provide this information or is not readily available.

Airboats and Hovercraft remain prohibited on Beaver Creek NWR which maintains the primitive characteristics of the nationally designated "wild" river and reduces impacts to float boaters.

Effects from Special Designations

Special designations may result in limitations on travel. The RNAs are closed to motorized use. Trails could be constructed outside of the RNA boundary to improve access. Hiking and hunting would be allowed. Impacts to motorized travel would be minimal since most of the RNAs are relatively inaccessible to this use, except in the winter. The RNAs cover approximately 1.2 percent of the planning area. There would be no impacts to non-motorized travel.

4.7.2.3.3. Alternative B

Effects from Wildlife

Same as Alternative A, but impacts to Travel Management would be greater because summer use of OHVs would be restricted to designated trails and therefore provide less opportunity for motorized use. Winter use of snowmobiles could be impacted by seasonal closures within winter caribou range. Snowmobile use numbers in the winter habitat area are generally very low, so impacts are expected to be low.

Effects from Forest and Woodland Products

Personal use of timber (e.g., house logs, firewood) and commercial harvest of forest and timber products would not be authorized within the White Mountains SRMA (1,016,000 acres). There would be no impact to travel management under Alternative B.

Effects from Lands and Realty

Effects would be the same as Alternative A with the addition of, the BLM would pursue a ROW for the Colorado Creek Trail as it crosses state lands. If the ROW is not granted, access to the Colorado Creek Trail as well as maintenance of the trail would be difficult. Additionally, under Alternative B, the White Mountains ACEC and RNAs would be designated as a ROW avoidance area and only one of the transportation corridors (Nome Creek) would be retained. Effects to travel management would essentially be the same as Alternative A because so few ROW are likely, these additional decisions would have little effect.

Effects from Recreation

The RSC setting provides a framework for identifying the types of recreation activities that the public might desire, which is directly related to transportation and travel management opportunities in those areas. The RSC setting for Alternative B would maintain approximately three percent (26,000 acres) of the subunit as Primitive (closed to motorized use year round). Approximately sixty-one percent of the subunit (483,000 acres Semi-Primitive, including Beaver Creek and 140,000 Backcountry) would be limited to winter use of snowmobiles (1,000 pounds curb weight and less). Approximately thirty-six percent (329,000 acres Middlecountry, and

39,000 acres Frontcountry) would limit summer OHV use to designated trails. Since Recreation Management Zones (RMZs) and Travel Management Zones (TMZs) are delineated with the same boundaries under each alternative and were designed to complement one another, impacts from recreation are expected to be minimal.

Under Alternative B, the RNAs would be limited to subsistence use of snowmobiles in the winter (October 15 – April 30) with adequate snow cover and by free-use permit only. The free-use permit would be; Free, widely available and easy to get (phone, email, office, mail), available to any federally qualified subsistence user, and does not have any stipulations. The RNA's would be closed to all other motorized use. There would be some conflict associated with this use. Existing snowmobile tracks into the RNA's will entice non-qualified users to travel into the RNA's which would create additional impacts to the resources from trenching through the snow and tearing vegetation from hill climbing and traversing the steep terrain typical of the RNAs in the White Mountains National Recreation Area. Conflicts would occur from disturbing non-motorized users that expect a primitive experience as prescribed for in the recreation management objectives. Conflict would also occur between user groups when one group is allowed access to an area while another group is not allowed access to the same area by the same means.

Effects from Travel Management

Under Alternative B, the OHV designation for the White Mountains Subunit would be Limited except for Primitive areas, which are Closed (Map 53). The RNAs would be closed to all other motorized use. Similar to Alternative A, some trails would be managed as non-motorized recreation trails and be closed to motorized use, including the Summit and Table Top trails. Cross-country use of snowmobiles by the general public would be allowed except in the RNAs where only subsistence use of snowmobiles would be allowed as described above.

OHV weight limitations would change under this alternative from GVWR to curb weight. This change makes it more understandable to the public; the information is more attainable from the manufacturers making it simpler to enforce and is more in line with regulations used by the State of Alaska on lands adjacent to the subunit. Summer use of OHVs in the Middle Country and Front Country TMZs would be changed from 1,500 pounds GVWR to 1,000 pounds curb weight and 50" and less in width. Winter use of snowmobiles would change from 1,500 pounds GVWR to 1,000 pounds curb weight and 50" and less in width.

Under this alternative, travel would be restricted to designated trails, as well as by weight and width of the vehicle (Table 4.21, "White Mountains: Comparison of OHV Designations"). A total of 139 miles of trails would be accessible for ATVs weighing 1,000 pounds curb weight and less (Map 53). Travel management decisions under Alternative B would reduce the amount of area allowable to operate an ATV compared to the other alternatives. The designated trails, however, are the same trails and same mileage that have generally existed in the White Mountains NRA for the past 15 or more years. The main difference is that OHVs would be required to stay on the trail. Proliferation of user made trails should be significantly reduced compared to Alternative A. Additional trails may be designated in the future, increasing available use areas.

Effects from Special Designations

Under Alternative B, 589,000 acres would be designated as the White Mountains ACEC (Map 64) to protect caribou and Dall sheep habitat. Impacts from ACEC management could include limits on seasonal use of trails and construction of additional trails. Effects from RNAs would be the same as Alternative A.

Fossil Creek (23 miles) would be recommended suitable for addition to the NWSR. Should Fossil Creek be designated, impacts to travel management are expected to be minimal since it would be designated as a "scenic" river and currently has trails and two cabins inside the corridor. The BLM could modify existing trails and develop new trails as needed.

4.7.2.3.4. Alternative C

Effects from Wildlife

Same as Alternative B.

Effects from Forest and Woodland Products

Under Alternative C, personal use of timber and commercial timber sales would not be allowed within the Beaver Creek WSR Corridor and the RNAs, but would be considered in other areas. Timber salvage sales would be considered throughout the subunit. If this use occurred, it could either result in trail development and a benefit to motorized uses, or it could result in degradation of existing trails due to heavy use for access to timber sales areas.

Commercial use of forest products would not be authorized within RNAs (12,600 acres), but would be allowed on the remaining lands. Impacts from this activity are expected to be low based on historical demand and usage. All harvest of timber and forest products fall under a discretionary permit and come with stipulations attached to minimize impacts.

Effects from Lands and Realty

Although no transportation corridors would be retained and there would be no ROW avoidance areas under Alternative C, effects would essentially be the same as Alternative B.

Effects from Recreation

Effects would be similar to Alternative B, except the RSC settings would be slightly different. The RSC setting for Alternative C (Map 54) would maintain approximately three percent (26,000 acres) of the subunit as Primitive (closed to motorized use year round). Approximately fifty-five percent (171,000 acres Semi-Primitive, including Beaver Creek and 382,000 Backcountry) would be limited to winter use of snowmobiles (1,000 pounds curb weight and less). Approximately forty-three percent (398,000 acres Middlecountry and 39,000 acres Frontcountry) would limit summer OHV use to designated trails. Compared to Alternative B, more area would be available for motorized uses under Alternative C. Impacts from Recreation would likely be minimal.

Effects from Travel Management

Under Alternative C, the OHV designation for the White Mountains Subunit would be Limited except for Primitive areas, which are Closed (Map 54). The RNAs would remain closed to casual use of snowmobiles, but limited to winter access for subsistence users, as in Alternative B. Similar to Alternative A, some trails would be managed as non-motorized recreation trails and generally be closed to motorized use, including the Summit and Table Top trails. Cross-country use of snowmobiles would be allowed except in Closed areas. Similar to Alternative B, travel would be restricted to designated trails, as well as weight and width of the vehicle under this alternative. A total of 139 miles of trails would be accessible for ATVs weighing 1,000 pounds curb weight and less.

Alternative C differs from Alternative B in that 27 miles of trails would be accessible for UTVs (Map 54) and OHVs weighing 1,000 pounds curb weight and less would be allowed to travel off trail to retrieve legally harvested game (see definition in Glossary). This alternative allows greater use of ATVs compared to Alternative B and allows the use of UTVs on some developed trails. Proliferation of user made trails should be significantly reduced compared to Alternative A, because ATVs are restricted to designated trails except for game retrieval; trail proliferation could be higher than under Alternative B because of the allowance for game retrieval. Off trail use would be minimal and dispersed resulting in fewer effects.

Effects from Special Designations

Management of RNAs would be the same as Alternative B, except that primitive camping and development of primitive hiking trails would be allowed. This alternative could benefit travel management because trails could be established to provide for easier travel through the RNA and users would be able to camp inside the RNA rather than having to travel greater distances outside the RNA to camp.

4.7.2.3.5. Alternative D

Effects from Wildlife

Same as Alternative A.

Effects from Forest and Woodland Products

Effects would be similar to Alternative C, although more area would be open to both personal and commercial uses of timber and forest products. These activities are discretionary and must be compatible with management of the NRA and other resources. Impacts would be minimized through the permitting process or the activity would be denied.

Effects from Lands and Realty

Same as Alternative C, except the Perhaps Creek recreation withdrawal would be available for conveyance to the State of Alaska. This parcel is surrounded by state land and conveyance would have minimal effects.

Effects from Recreation

Effects would be similar to Alternatives B and C, except the RSC settings would be slightly different. The RSC setting for the Alternative D would maintain less than one percent (12,600 acres) of the subunit as Primitive (closed to motorized use year round). Approximately fifty-one percent (69,000 acres Semi-Primitive, Beaver Creek, and 445,000 Backcountry) would be limited to winter use of snowmobiles (1,000 pounds curb weight and less). Approximately forty-eight percent (452,000 acres Middlecountry and 39,000 acres Frontcountry) would limit summer OHV use to designated trails. Alternative D would provide the greatest level of opportunity for motorized uses. UTVs would be allowed on 112 miles of designated trails. There is expected to be some conflict with other users. The trails were not designed for UTVs. The wider width of the UTV will force others off of the trails in order to pass. Impacts from recreation, however, would still be expected to be minimal.

Effects from Travel Management

Under Alternative D, the OHV designation for the White Mountains Subunit would be Limited. The RNAs (12,600 acres) would be managed the same as in Alternative B and C. There would not be a White Mountain Spine designated under Alternative D. Similar to Alternative A, some trails would be managed as non-motorized recreation trails and generally be closed to motorized use, including the Summit and Table Top trails. Cross-country snowmobile use would be allowed except in Closed areas.

Travel would be restricted to weight and width of the vehicle. Cross-country travel, using ATVs, 1,000 pounds curb weight and less, would be allowed. Substantially more miles of trail, 112 miles, would be accessible for UTVs (Map 55) Under Alternative D, Travel Management decisions would greatly increase the amount of area where OHVs can travel and expand the type of vehicles allowed compared to Alternatives B and C. This would create a greater impact on non-motorized travelers. None of the trails in the White Mountains National Recreation Area were designed for UTVs. Their use on 112 miles of trails will result in impacts to soils, and vegetation because the wider UTV will have to travel off trail to pass other trail users.

The RNAs would be limited to subsistence use of snowmobiles. The management and impacts would be described the same as in Alternatives B and C.

Effects from Leasing of Locatable Minerals

Impacts from leasing of locatable minerals could occur on 160,000 acres in Middle Country and Front Country RMZs. Access routes to leases could benefit other users if trails were constructed in the proper locations and use sustainable trail construction techniques. Cross-country travel is allowed under alternative D, however, the addition of more concentrated routes with multiple

passes over the same area would compact the soil and vegetation and create a permanent scar on the landscape. The access needs and infrastructure associated with mining activity will increase the proliferation of user-created trail networks in a heavily used area. User-created trails by four-wheelers are not typically sustainable because they tend to go straight up and straight down hills, which creates a path for water to accelerate and intensify erosion. User-made trails deteriorate over time. Mining activity is expected to occur adjacent to Backcountry and Semi-Primitive recreation management zones which are closed to the summer use of OHVs (May 1 through October 30). Mining access routes could attract more ATV users into these border areas where there is currently little to no motorized activity. Direct and cumulative effects of this action on travel and recreation are discussed in Appendix M.3.2.9.

Effects from Special Designations

Effects from RNAs would be the same as Alternative C.

4.7.2.3.6. Alternative E (Proposed RMP)

Effects from Wildlife

Same as Alternative B.

Effects from Forest and Woodland Products

Effects would be similar to Alternative C, although more area would be open to both personal and commercial uses of timber and forest products. These activities are discretionary and must be compatible with management of the NRA and other resources. Impacts would be minimized through the permitting process or the activity would be denied.

Effects from Lands and Realty

Same as Alternative C, except the Perhaps Creek recreation withdrawal would be available for conveyance to the State of Alaska. This parcel is surrounded by state land and conveyance would have minimal effects.

Effects from Recreation

Under Alternative E the delineations of Recreation Management Zones would be the same as described in Alternative C with a few use exceptions. The entire SRMA (1,016,000 acres) would be open to the use of snowmobiles with adequate snow cover, including within the RNAs. Another difference would be the allowance of the larger UTVs on approximately 27 miles of designated trails. UTVs would not be allowed off trail. The acreages would remain the same in each RMZ as in Alternative C. Use levels would be similar to Alternatives A and D except that opening of previously closed areas will attract some increased use in those areas as well as increased use overall.

RMZs were developed as part of the planning process for the White Mountains SRMA. By allowing use of snowmobiles in the RNAs (October 15 to April 30), the prescriptions for resource uses, activities, experiences and benefits would be lost. The primitive RMZs are designed to be managed for non-motorized use. These zones are managed for experiencing solitude, escaping crowds, having a greater connection with nature, a heightened awareness of the natural world, and enjoying scenery and the natural landscape. Opening the primitive areas to motorized use would be contradictory to the prescriptions BLM is managing for. There would be conflicts that occur

between non-motorized users and snowmobiles being operated where this use did not traditionally occur. The aforementioned areas have been officially closed to such use since 1986.

There is likely to be some user conflict between the ATV and UTV users. None of the trails in the White Mountains were developed with UTVs in mind. As the different use types encounter one another along the trail it will be difficult to pass. The majority of trails in the White Mountains SRMA are approximately 8' (96") wide, the UTVs that would be allowed under this alternative are well over half the width of the trail at 64" wide. Trails where UTVs will be allowed under Alternative E will have to be widened over the next 5 years and/or larger pull-offs and turn-arounds will have to be constructed as well as increased signing and public user education.

Effects from Travel Management

Under Alternative E, 100 percent of the White Mountains Subunit would be designated as Limited for OHV use. Winter motorized use of snowmobiles would be allowed on 100 percent of the subunit. The RNAs, closed in all other alternatives, would be opened to the use of snowmachines in winter (October 15 to May 1) with adequate snow cover.

Travel would be restricted to weight and width of the vehicle. Cross-country travel, using ATVs, 1,000 pounds curb weight and less, would be allowed. Approximately 27 miles of trail would be accessible for UTVs. Under Alternative E, Travel Management decisions would greatly increase the amount of area where OHVs can travel and expand the type of vehicles allowed compared to Alternatives B and C. This would create a greater impact on non-motorized travelers.

The prohibition for the use of airboats and hovercraft on Beaver Creek WSR would be lifted under Alternative E. There will be some conflicts associated with the use of these types of watercraft as Beaver Creek is a designated Wild and Scenic River. The river is noted for its primitive character and is mostly a one way, float boat river. It narrows in places to less than 12 feet in width, narrower in some areas due to overhanging sweepers, and can be extremely shallow. Often float boats will have to drag across shallow riffles. There are a few inboard and outboard motorboats that operate on the river, mainly from private inholdings along the river. They are generally on the river during the moose hunting season and only travel a few miles up and downstream of their inholding due to shallow water. Hovercraft and airboats can go over the shallowest of water, over gravel bars and up on the banks off the river. Airboats and hovercraft are more amphibious in nature than an outboard motorboat. There would be some safety concerns for float boaters that are travelling one way, as it will be difficult for them to get out of the way of motorized traffic. Airboats and hovercraft have to travel with some speed to be maneuverable which can be dangerous to float boaters. Once the airboat falls off step, it would be difficult to get back on step in shallow water. Every marsh and swamp adjacent to the river could have airboat and hovercraft traffic, especially during moose hunting season. The marshes would be targeted for access by these watercraft; trees would be cut to make trails to access the marshes, and vegetation would be compacted and torn. There are few limitations to where airboats and hovercraft can travel as long as the terrain is not too steep.

There is a 15 horse power limit for launching boats in the Nome Creek valley, so airboats and hovercraft will have to come up from the Yukon River, almost 200 miles to reach the designated portion of Beaver Creek WSR. It is unlikely that many would attempt to travel this distance. It is more likely that individuals with private inholdings along the river would attempt to get airboats or hovercraft to their property to expand their range along the river corridor. The decision to allow additional types of motorized watercraft on the river would likely result in attempts to

travel the shallow narrow channels, and as a result, more boats getting stuck, broken down, and abandoned on the river.

Noise from airboat and hovercraft use is in the range of 90 to 108dbA, similar to chainsaws at 110 dbA, and rock concerts 110 to 120 dbA. Noise levels of these types of craft will have a negative effect on recreational float boaters. although noise levels would appear to be temporary in nature as the vehicle passes by, in actuality a floater or anyone up on the hillside above the river will hear these watercraft from great distances due to the structure of the river valley.

It is likely that impacts resulting from the use of airboats and hovercraft could result in some changes to travel management in the area and additional restrictions such as size of watercraft, horsepower limitations, and noise restrictions.

The potential exists for summer use of OHVs within the Backcountry and Semi-Primitive RMZs, however, these decisions will be deferred to the travel management plan. The impacts of allowing this use will be analyzed in the NEPA document associated with the travel management plan.

Approximately 417,000 acres would be delineated as crucial caribou and Dall sheep habitat and management prescriptions include limitations to OHV use. Because these habitats overlap the management of the Middlecountry RMZ between Roy and Ophir creeks, interim rules would apply to this area until the travel management plan is completed.

Effects from Special Designations

Special designations may result in limitations on travel. The RNAs (1.2 percent of the subunit) would be closed to motorized use in the summer, but open to winter use of snowmobiles. Trails could be constructed outside of the RNA boundary to improve access. Hiking and hunting would be allowed. Impacts to motorized travel would be minimal since most of the RNAs are relatively inaccessible to this use, except in the winter. There would be minimal positive effects to motorized recreationists as there would be some additional acreage open to winter use of snowmobile use.

4.7.2.3.7. Cumulative Impacts

A large number of the trails that exist in the White Mountains NRA and are used in the summer by OHVs were built by prospectors to access or scout claims, by hunters using large tracked vehicles, or by seismic exploration activities; while other trails were constructed for trapping, or access from one village to another. Historically, trails were constructed via the path of least resistance for the vehicles or type of use at the time. These trails were not constructed on the best terrain with the best soils, and may not be sustainable. This will continue to effect travel and transportation management for years to come.

Use of the area has increased substantially since the White Mountains NRA was designated in 1980. Technology has advanced and more people own OHVs than ever before. Recreation use levels are expected to increase due to a ten to fifteen percent increase in population over the life of the plan. Surface-disturbing activities may contribute to route restrictions and alterations as some areas and existing routes and trails become more heavily traveled. New routes could increase access to remote areas that were previously inaccessible by motorized vehicles.

Increasing population would continue to put pressure on the BLM to adequately manage travel and transportation on public lands. Public use of existing routes and trails would continue to increase as population increases. Alaska Department of Natural Resources indicated over 13,800

ATVs registered in Interior Alaska in 2008, which is about twenty-five percent of all ATVs registered in Alaska. These numbers indicate a need for continuing effective transportation and travel management planning throughout the White Mountains NRA and in surrounding areas.

The adjoining lands to the south and west of the White Mountains NRA are managed by the State of Alaska. OHV rules on state lands are different than OHV rules on BLM lands. The State of Alaska Generally Allowed Uses restrict OHVs to 1,500 pounds curb weight and allow cross-country travel in most areas. This may lead to some confusion to the public. The public may not know that they have entered the NRA and that use restrictions are different, as in Alternatives B and C where OHV use is restricted to designated trails. A proliferation of user-made trails could occur along the management boundaries.

4.7.3. Special Designations

4.7.3.1. Wild and Scenic Rivers White Mountains Subunit

Summary of Effects

Under all alternatives the Beaver Creek WSR will continue to be managed to protect the free-flowing characteristics of the river, water quality and Outstandingly Remarkable Values. Outstandingly remarkable values for Beaver Creek are scenic, recreation, geologic, and fish and wildlife populations and habitat.

Management actions that protect the naturalness of the landscape such as wilderness characteristics, protection of fish and wildlife habitats, protection of vegetation, and recreation management that manages for more primitive experiences will help protect many of the Outstandingly Remarkable Values of river systems.

Alternative B is the only alternative where river segments are recommended for inclusion to the National Wild and Scenic River System (NWSR). Fossil Creek is recommended as “scenic” with outstandingly remarkable scenic and geologic values.

4.7.3.1.1. Alternative A (No Action)

Under Alternative A no additional river segments are recommended suitable for inclusion to the NWSR. The BLM would not recommend that Congress designate any river segments. Beaver Creek would continue to be managed to protect water quality, free-flowing characteristics and important river values.

4.7.3.1.2. Alternative B

In general, Alternative B anticipates the lowest level of resource development and is the only alternative where river segments are determined to be suitable for inclusion to the NWSR. The BLM would recommend that Congress designate one segment. This recommendation would influence the Congressional decision and increase the likelihood of permanent legislative protection. Decisions are evaluated for effect on identified Outstandingly Remarkable Values, free-flowing character and water quality.

Through the Wild and Scenic Rivers Inventory (Appendix E, *Wild and Scenic Rivers Inventory*) the BLM has determined which rivers and streams are suitable for inclusion in the NWSR. In the White Mountains Subunit, Fossil Creek was determined to be suitable for designation as “scenic,” with outstandingly remarkable scenic and geologic values. Any segment determined to be suitable must be managed for the protection of its Outstandingly Remarkable Values and free-flowing nature until such time as Congress acts upon the determination finding and either designates the river segment or removes it from consideration. If the segment is removed from consideration by Congress, the BLM would manage the segment according to the management provisions of the RMP. The determination of suitable is a policy determination.

Effects from Air and Atmospheric Values

Protection and enhancement air resources that would continue to promote visually clear skies and maintain good visibility would protect outstandingly remarkable scenic values.

Effects from Cave and Karst Resources

The protection of cave resources located adjacent to or within the river corridor would protect outstandingly remarkable scenic and geologic values.

Effects from Cultural and Paleontological Resources

Surface-disturbing activities (e.g., site excavation) have the potential to directly and indirectly impact water quality and indirectly impact outstandingly remarkable scenic values.

Effects from Soil, Vegetation, and Water Resources

Management of soil resources, vegetative communities, and watersheds for a properly functioning condition within riparian zones, uplands, wetlands and aquatic areas would directly and indirectly enhance water quality and outstandingly remarkable scenic values.

Effects from Visual Resources

Scenic river segments would be managed as a VRM Class II with the objective to retain the existing character of the landscape. Management activities may be seen but should not attract the attention of a casual observer. Changes may occur but should repeat the basic elements of the surrounding landscape. This would help protect outstandingly remarkable scenic values.

Effects from Wilderness Characteristics

The maintenance of wilderness characteristics would directly protect outstandingly remarkable scenic values, the free-flowing characteristics, and water quality.

Effects from Wildlife

Management of a naturally functioning ecosystem would directly and indirectly protect outstandingly remarkable scenic values and enhance water quality.

Effects from Lands and Realty

Land use authorizations, such as leases and rights-of-way, could indirectly and directly impact outstandingly remarkable scenic and geologic values, directly impact free-flowing characteristics, and indirectly impact water quality if authorized across or along the river segment.

Effects from Recreation

Fossil Creek is located within the Backcountry Cache Mountain RMZ. Some facilities may occur within this RMZ and many visitors may come in groups that average up to seven people. These groups may visit the segment and may impact outstandingly remarkable scenic values through the development of social routes. Facilities may directly impact scenic quality and indirectly impact water quality, however they would be designed to blend with the surrounding landscape characteristics and to not adversely affect water quality.

Effects from Travel Management

Unrestricted non-motorized travel could directly impact outstandingly remarkable scenic values and water quality with the development of social travel routes. Unrestricted aircraft landings could indirectly impact water quality.

Restricted winter motorized overland travel by OHVs weighing 1,000 pounds curb weight and less could indirectly impact water quality by allowing motorized access to remote areas. Winter OHV use may directly impact outstandingly remarkable scenic values with the development of winter travel routes. Restricted motorized travel could directly and indirectly impact water quality by allowing motorized access to remote areas. Motorized use may directly impact outstandingly remarkable scenic values and indirectly impact outstandingly remarkable geologic values with the development of travel routes.

Effects from Special Designations

Fossil Creek, totaling 23 miles and 5,800 acres, would be recommended for designation to the NWSR. The designation of this river by Congress would provide for greater protection of overall river values and of outstanding remarkable river values specifically. The amount of protection is dependent on the classification of the river segment. Management of suitable rivers would be coordinated with the State of Alaska.

Designation and management of 589,000 acres as the White Mountains ACEC would also protect outstandingly remarkable scenic and geologic values in Fossil Creek and directly enhance water quality due to limitations and restrictions to development.

The management of Limestone Jags RNA would also protect outstandingly remarkable scenic and geologic values because of its designation as a right-of-way avoidance area and closure to off-road vehicles and camping. These management actions would also directly and indirectly enhance water quality.

Effects from Hazardous Materials

Environmental remediation activities such as the removal of surface or buried wastes from abandoned sites and removal of contaminated soils could enhance directly and indirectly water quality and outstandingly remarkable scenic values depending on the location of these activities.

4.7.3.1.3. Alternative C

Under Alternative C, no additional river segments are identified as suitable for inclusion in the NWSR. The BLM would not recommend that Congress designated any additional river segments.

4.7.3.1.4. Alternative D

Same as Alternative C.

4.7.3.1.5. Alternative E (Proposed RMP)

Same as Alternative C.

4.7.3.1.6. Cumulative Impacts

Past, present and reasonably foreseeable actions that are relevant to Wild and Scenic Rivers management include increases in motorized use on both water and adjacent lands, utility and transportation rights-of-way, recreation use, travel management, and use restriction to protect wildlife, fisheries and vegetative resources.

Cumulative effects will accrue from BLM management decisions in addition to activities on surrounding lands during and beyond the life of the plan. Much of the land surrounding the White Mountains is either state lands or other federal. State lands are generally subject to resource development activities which may have a direct impact on water quality and other river related values. Development of lands along waterways could have an indirect impact on other rivers by increasing the importance of river related values of free-flowing, water quality, scenic, recreation, geologic, fish and wildlife habitats and populations, cultural and historic on those other rivers.

Delineation and management of crucial caribou and Dall sheep habitat and maintenance of wilderness characteristics, as well as measures to protect other resource values on adjacent federal lands, would help protect lands within the region. Proposed and current management in these areas would limit development and help maintain a more natural ecosystem with benefits to water quality and other river related values.

Protection of river related values including outstandingly remarkable scenic, geologic and wildlife population and habitat values along the Beaver Creek WSR would continue. No rivers on other agency lands have been identified as having values of eligibility in the subunit. Protection of river related values along the proposed addition of Fossil Creek with outstandingly remarkable scenic and geologic values would continue if designated by Congress. The BLM could implement other means to protect river values if these segments are not included in the system.

4.7.3.2. Research Natural Areas White Mountains Subunit

4.7.3.2.1. Alternative A (No Action)

Under this alternative, scenic values would be maintained in Research Natural Areas (RNAs) with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, camping, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by the development of hiking trails within the RNAs.

4.7.3.2.2. Alternative B

Under Alternative B, scenic values would be impacted the same as Alternative A.

4.7.3.2.3. Alternative C

Under Alternative C, scenic values would be maintained in RNAs with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by allowing camping and with the development of hiking trails and user-created travel routes from camping locations within the RNAs.

4.7.3.2.4. Alternative D

Under Alternative D, scenic values would be impacted the same as Alternative C.

4.7.3.2.5. Alternative E (Proposed RMP)

Under Alternative E, scenic values would be maintained in RNAs with the assignment of Visual Resource Management Class II, by maintaining the closure for OHV use, and mineral entry and mineral leasing. The assignment of a Primitive Recreational Opportunity Spectrum Class will also help maintain scenic values by setting management objectives that protect the natural setting characteristics. Scenic values could be impacted by allowing camping and with the development of hiking trails, user-created travel routes from camping locations within the RNAs and by allowing cross-country winter OHV use.

4.7.4. Social and Economic

4.7.4.1. Economics White Mountains Subunit

Summary of Effects

An economic effect in the White Mountains Subunit continues to result from recreation oriented activities as a result of population growth in the region. Economic effects due to mining on Non-federal land and existing claims would also continue to be important to the region. Mineral leasing is allowed under Alternative D, and to very limited extent in Alternative E, and may have an economic effect.

4.7.4.1.1. Effects Common to All Alternatives

There are no effects common to all alternatives in the White Mountains subunit other than those discussed as common to all subunits in section 4.3.3.1.

4.7.4.1.2. Alternative A (No Action)

Effects would be limited to increase in currently allowed economic activities resulting from population growth.

Existing mining and new prospects non-federal land, particularly near Livengood would result in economic benefits to the Fairbanks North Star Borough. However, these would not be a result of BLM decisions in this RMP.

4.7.4.1.3. Alternative B

Economic effects would be limited to effects of population growth on recreation use. There would be no economic effect from leasable or locatable mineral as the subunit is closed to mining activity under this alternative.

4.7.4.1.4. Alternative C

Same as Alternative B.

4.7.4.1.5. Alternative D

Effects from Recreation and Locatable Minerals

An economic effect in the White Mountains Subunit continues to result from recreation oriented activities as a result of population growth in the region. Economic effects due to mining on non-federal land and on existing federal claims outside of the White Mountains NRA, but within the subunit, would also continue to be important to the region. There are federal, state, and patented mining claims in the Livengood area with ongoing mineral exploration. Exploration and leasing for placer gold and rare earth mineral exploration would result in positive economic effects from this subunit under Alternative D.

The following discussion is based on gold mining activities likely to occur on land leased for placer or suction dredge mining (Stebbins 2009). Section 4.4.4.1.2 Fortymile Subunit, Effects from Locatable Minerals of the Draft RMP/EIS (BLM 2012a) outlines the Stebbins models for small-and large-scale placer mines, life of mines, and a background discussion of the types of economic impacts and is incorporated by reference.

Economists consider three categories of employment and income in considering the effect of an activity such as mining. These three categories are: direct employment and income, including only employees of mining companies; Indirect employment and income such as employees of businesses providing goods and services to mining companies; and, induced employment and income occurring when jobs are created as a result of spending of direct and indirect income attributable to mining activity. All employment and income shown in this analysis is estimated using input and assumptions from BLM reports (Stebbins 2009, BLM 2009) and McDowell reports (2006 and 2009).

Opening the identified lands in the White Mountains NRA to hardrock mineral leasing under Alternative D is predicted to result in large and small-scale placer mining operations. Small-scale placer mining uses a bulldozer, and excavator and a mobile wash plant to excavate and process gold-bearing gravel. In this model, a two-man crew works 12 hours per day, seven days per week, during a 130-day season. The camp includes one support person and a cook; a total of four workers. Eleven small-scale placer mines are forecast to operate with employment of about four workers each.

Large-scale placer operations utilize excavation equipment larger than the small-scale model. In this model, 2 two-man crews moving material each work a 10-hour shift, seven days per week, during a 130-day season. Five additional employees, including a supervisor, skilled workers, and laborers; a total of nine workers are included in the model. Assuming two large-scale placer mines, the resulting employment is about eighteen workers.

Suction dredging would occur on about 11 new leases. These would employ approximately two workers per operation, for all phases.

In addition, the BLM development scenario indicates approximately four licensed placer exploration efforts. These are included in direct income calculations shown in Table 4.12, "Employment and Income Under Action Alternatives".

The total mining employment on BLM-managed lands would be estimated at 84 part-year workers. Data prepared by the State of Alaska uses full-time equivalents. The full-time equivalent in the White Mountain Subunit would be approximately 33 workers, based on the Stebbins (2009) models. Total employment by the Alaska minerals industry in 2012 was 4,366 full-time equivalent jobs (Athey 2013). The statistics indicate less than one percent of the industry employment on BLM-managed lands would occur at White Mountain operations. The DGGs reported the average monthly wage for mining in Alaska during 2010 at \$8,345. White Mountains gold mining operations account for approximately \$3 million in wages, annualized. Indirect income is estimated at approximately \$2.7 million. Jobs data indicates maximum level of effect predicted to occur during the life of the plan. Development scenarios used as the basis for analysis do not contain time lines for development. Mineral exploration licenses or leases may not be issued for years after the plan is completed.

The BLM plans to open 11,000 acres of known deposits at the headwaters of Roy Creek to mineral leasing and predicts that it will eventually issue competitive leases for deposits of certain rare earth elements under 43 CFR part 3500 on these lands. The lease is offered competitively and a royalty may result. The BLM will charge fair and reasonable rental, determined at the time of licensing or leasing. These rentals are exclusive of royalties.

Exploration activities could include mapping and drilling or trenching in the lease area over a five year period. Income effects would depend upon the size of the initial operation, which may begin with as few as three personnel plus a helicopter crew, all based off site. It is fair to assume the minimum cost of exploration over a 120 day period would average approximately \$2,000 to \$2,500 per day. This is \$240,000 to \$300,000 per season in overall cost. The cost is essentially field personnel, helicopter contract, and fuel. Part of this cost would be attributed to the Fairbanks economy. Beyond the initial exploration, expansion of activities may occur, including further drilling and delineation, and eventual mining operation. Additional NEPA analysis will be necessary on a case-by-case basis for the BLM decision to lease for production.

There are no special recreation permits in the area of likely mineral development. No impacts to commercial recreation permits are anticipated (section 3.2.9). The likely economic effect in an area of little or no commercial recreational activity is zero.

Section 3.2.10 Subsistence reports: "Contemporary harvest data indicate little current use of White Mountains caribou and Dall sheep by rural subsistence hunters however use of these populations could increase in importance over the life of the plan and should not be discounted (Subsistence Resources, White Mountains Subunit, Draft RMP/EIS)." Given that there is little or no documented subsistence use in the White Mountains NRA, an economic effect is unlikely.

4.7.4.1.6. Alternative E (Proposed RMP)

Effects from Recreation and Locatable Minerals

An economic effect in the White Mountains Subunit continues to result from recreation oriented activities as a result of population growth in the region. Economic effects due to mining on non-federal land and on existing federal claims outside of the White Mountains NRA, but within the subunit, would also continue to be important to the region. There are federal, state, and patented mining claims in the Livengood area with ongoing mineral exploration.

New mining of locatable minerals is not allowed under this alternative.

A small economic effect may accrue to leasing of 4,000 acres for fluid leasable minerals and for solid leasable minerals in this subunit under this alternative.

4.7.4.2. Environmental Justice White Mountains Subunit

Summary of Effects

Communities most likely to be effected by any increased activity in the White Mountain Subunit generally do not qualify as environmental justice populations. Minority or low income populations near the subunit may benefit from employment in the recreation industry.

4.7.4.2.1. Effects Common to All Alternatives

Recreation activities would be slightly higher under all alternatives due to population growth in the region. Environmental justice effects to communities in the area may be positive if employment in guiding or associated activities accrues to local populations. Since the majority of the land in this subunit will be closed to leasing and mining no effects are likely to occur under any alternative.

4.7.4.2.2. Alternative A (No Action)

No environmental justice effects.

4.7.4.2.3. Alternative B

No environmental justice effects.

4.7.4.2.4. Alternative C

No environmental justice effects.

4.7.4.2.5. Alternative D

The number of Special Recreation Permits would be slightly higher under Alternative D than in any other alternative. Environmental justice effects to communities in the area may be positive if employment in guiding or associated activities accrues to local populations.

Communities most likely to be affected by increased activity in the White Mountains Subunit are (Fairbanks and Livengood) do not qualify as environmental justice populations. Minority or

low income populations in the Fairbanks area may benefit from employment in the recreation and mining industries.

Effects from Locatable Minerals

New mining leases and mineral exploration could result in additional employment accruing to local populations. Minority and low income populations would not be disproportionately impacted.

Possible negative impacts to environmental justice populations and the entire population of the area include loss of employment in another existing industry due to mining development. However, there are no commercial activities in the area potentially opened to mining under Alternative D providing employment that will be affected. All populations may benefit from expanded recreation industry employment as well as mining employment within the White Mountains Subunit. This includes additional land outside of the White Mountains NRA.

Loss of subsistence resources or opportunity may be considered. However, the extent of subsistence use of the specific areas likely to be affected must be demonstrated before there is an attributable and measurable impact. Current data indicate little subsistence activity in these areas. The Fairbanks North Star Borough is also classified as a non-rural community as such, residents of the borough do not qualify to fish or hunt under federal subsistence regulations.

4.7.4.2.6. Alternative E (Proposed RMP)

Mineral exploration on existing mining claims could result in additional employment accruing to local populations. Minority and low income populations would not be disproportionately impacted. Effects from mining under this alternative will be approximately the same as under Alternative B, as acreage near Livengood where the existing ANCSA withdrawal would be lifted is currently under valid mining claims. Exploration on these claims will continue in either case.

Possible negative impacts to environmental justice populations and the entire population of the area include loss of employment in another existing industry due to mining development. All populations may benefit from expanded recreation industry employment as well as mining employment within the White Mountains Subunit. This includes additional land outside of the White Mountains NRA.

Loss of subsistence resources or opportunity may be considered. However, the extent of subsistence use of the specific areas likely to be affected must be demonstrated before there is an attributable and measurable impact. Current data indicate little subsistence activity in these areas. The Fairbanks North Star Borough is also classified as a non-rural community as such, residents of the borough do not qualify to fish or hunt under federal subsistence regulations.

4.7.4.3. Social Conditions White Mountains Subunit

Summary of Effects

Most impacts to individuals and groups are minor to moderate in part because other opportunities exist for the activities within the planning area on nearby State of Alaska or a Native corporation lands. While it is possible for impacts of multiple resources to adversely affect individuals and groups in a cascading fashion, nearby communities exhibit sufficient resiliency to adapt to change.

All individual programs would have minimal net positive or negative effect to social conditions and are not analyzed further. For further discussion, see Effects Common To All Alternatives in all Subunits.

4.7.4.4. Subsistence White Mountains Subunit

Summary of Effects

Primary impacts on subsistence resources and uses in the White Mountains Subunit would be from decisions on recreation and travel management. Impacts include user conflicts, displacement of subsistence users, and potential declines in resource availability due to disturbance in critical habitats or during critical times (e.g., calving periods). Alternative D, which would allow the most latitude to OHV use and for mining (leasing of locatables), would have the highest negative impacts on subsistence. Alternative B, which would limit use of OHV the most, would confer the highest levels of protection to subsistence resources and uses. In Alternatives B–D areas where summer use of OHV would not be allowed, such as in Semi-Primitive and Backcountry Recreation Management Zones, federally qualified subsistence users participating in subsistence activities would need a permit for summer OHV use. The permit requirement would be considered a “reasonable regulation” under ANILCA Title VIII Section 811(b).

Alternatives B and E include designation of the White Mountains ACEC to protect caribou calving and post-calving habitat and Dall sheep habitat. The additional protection of these habitats would benefit subsistence resources. Many resource decisions, such as those for soil, water, air, wildlife, Special Status Species, and fish, would benefit subsistence resources (section 4.3.3.4 Impacts Common to All Subunits Subsistence.)

Little or no subsistence fishing occurs on BLM-managed lands in the White Mountains Subunit. In general, land use activities permitted in the area, such as development of transportation corridors and salable mineral deposits, would affect water quality at downstream locations, fish spawning or rearing areas, and indirectly impact subsistence fisheries harvested off BLM-managed lands. Stipulations to mitigate impacts to water quality and fish spawning and rearing areas would be attached to land use permits.

In general, land use activities permitted in the area, such as development of transportation corridors and salable mineral deposits, would affect water quality at downstream locations, fish spawning or rearing areas, and indirectly impact subsistence fisheries harvested off BLM-managed lands. Stipulations to mitigate impacts to water quality and fish spawning and rearing areas would be attached to land use permits.

No rights-of-way applications for roads, other than those from the BLM, have been received and it would be anticipated that none would occur over the life of the plan.

Measures to mitigate the impacts of any form of land use actions on subsistence resource and uses would be attached as stipulations to the authorizing documents. An ANILCA Section 810(a) evaluation and finding would be conducted for each action to assure no significant restrictions to subsistence uses would occur. A finding of “may significantly restrict” would result in a public hearing as required in Section 810(a) (1) and (2).

The White Mountains NRA is currently closed to all locatable mineral entry. Several acres of valid existing mining claims would continue to be developed around the Livengood area. No impacts to subsistence fishery resources or uses are expected from the alternatives.

Leasing of locatable minerals under Alternative D was analyzed in a supplement to the DRMP/DEIS and is not included in this section. Appendix M includes a complete copy of the Supplement.

The only community in this subunit is Livengood, which is also the only community within a 50 mile radius of the center of the White Mountains NRA. No data on subsistence land use patterns are available for this area. The communities of Stevens Village, Minto, Beaver, Birch Creek, Central, Circle and Fort Yukon are within a 100-mile radius. Only those villages within or bordering the planning area were included in the affected communities, therefore data for land use patterns for Minto was not included. However, many other rural communities participate in subsistence activities on the BLM-managed lands within the planning area.

Black and brown bear, caribou, moose, sheep, furbearers, ptarmigan, grouse, and small game are recognized as subsistence wildlife resources in the White Mountains subunit. Lifetime use of these resources by federally qualified subsistence users is documented by Sumida (1988, 1989) and in the CATG land use mapping project (preliminary 2015).

No subsistence use of specific resources on BLM-managed lands within the subunit has been documented; however, the Beaver Tribal Council includes the Mount Schwatka area and a portion of the Victoria Creek drainage in the designated subsistence area for Beaver (Sumida 1989). Oral history accounts and archeological findings documented by Caulfield (1983) indicate that bands of the Birch Creek people, Dendu Gwich'in, lived in the foothills of the White Mountains using primarily caribou and sheep. The Birch Creek bands also moved seasonally to Birch Creek, the Yukon River and many lakes and creeks to harvest fish, moose, waterfowl and other resources (Caulfield 1983) (Maps 102 and 103).

Ethnographic reports for residents of the Circle area document no subsistence use of BLM-managed lands within the subunit; however, Circle residents have been documented through harvest ticket and permit returns as hunting in the area. Little or no use of subsistence wildlife resources by other qualified users has been documented in ethnographic studies. However, based on registration permit and harvest ticket reports residents of other communities designated as rural by the Federal Subsistence Board participate in harvest activities in the subunit, including Tok, Circle, Central, Clear, Delta Junction, Fort Yukon, Manley Hot Springs, Anderson, Nenana, Glennallen, Cantwell, Fort Greely, Wrangell, Dillingham, Willow, Kodiak, Petersburg, Haines, Adak, Nome, Gustavus, Barrow, Manley Hot Springs, Tooksook Bay, Ninilchik, and Coldfoot.

Some land use decisions under the alternatives would impact vegetative communities and indirectly impact subsistence fish and wildlife resources harvested off BLM-managed lands. These are discussed by alternative in the following sections. Forest resources used for subsistence purposes on BLM-managed lands may also be impacted; however, little or no subsistence use of wood or forest products occurs on BLM-managed lands in this subunit. Subsistence resource availability and opportunity have declined in many areas across the planning area and subsistence use would be expected to increase in the subunit over the life of the plan.

4.7.4.4.1. Effects Common to Alternatives A–E

Effects from the alternatives in the White Mountains Subunit, based on reasonably foreseeable subsistence activity in the subunit, are common to all alternatives for the resources discussed in this section.

Effects from Fish and Aquatic Species

Alternatives B – E include Nome Creek as a High Priority Restoration Watershed and varying numbers of Riparian Conservation Areas (RCA). Managing areas as Restoration Watersheds and RCAs would protect and restore fish in watersheds and indirectly wildlife habitat in the White Mountains Subunit to the benefit of subsistence resources and uses.

Effects from Forest and Woodland Products

Decisions for the management of forest and woodland products vary widely over the alternatives for the White Mountains Subunit. Ethnographic studies document little subsistence use of these resources on BLM-managed lands in the subunit. Harvest of these resources would typically be closer to communities. Requests for free-use permits for personal use have been rare and no requests for free-use permits for subsistence harvest have been documented over the past 20 years.

Saw timber within the area is not considered marketable due to the remote location of stands of suitable trees. Harvest of timber for biomass projects could become economically viable over the life of the plan and result in applications for commercial timber permits. Impacts to subsistence resources or uses from commercial applications would be analyzed and mitigation measures developed to protect all resources and uses, including subsistence resources and uses.

Effects from Land and Realty Actions

Disposal or acquisition of lands would have minimal beneficial impacts to subsistence resources.

Rights-of-way for transportation, other than those for BLM rights-of-way, are not likely to occur within the White Mountains NRA. BLM proposed rights-of-way would be analyzed at the project level, and measures to mitigate impacts would be attached to authorizing permits.

Effects from Leasable Minerals

The lands managed by BLM in the White Mountains subunit would be closed to all leasable minerals in Alternatives A-C and to all but 4,000 acres in Alternative E. In Alternative D, 44 percent of the 1,020,000 acres of BLM-managed lands would be open to leasable minerals.

Due to lack of high potential oil and gas resources on lands managed by BLM, no activity would be expected over the life of the plan under any of the alternatives. Therefore, no impacts would occur to subsistence uses or resources from oil and gas exploration, drilling, development or related activities in the White Mountains Subunit.

No impacts would occur to subsistence uses or resources from exploration or development of solid leasable minerals or related activities in the White Mountains Subunit. No high potential coal lands occur in the subunit (Map 87).

Effects from Locatable Minerals

The White Mountains NRA is closed to locatable minerals in all alternatives except Alternative D. Impacts to subsistence uses and resources are discussed in the White Mountains supplemental EIS (Appendix M).

Approximately 4,000 acres of valid existing claims occur in the Livengood area and have been actively mined for decades. No new impacts to subsistence uses from decisions to continue mining in the area would be expected.

Effects from Salable Minerals

Some or all BLM lands in the subunit would be open to disposal of salable minerals in all alternatives. Existing material sites are located near highways, roads or other developments and near the end use. Demand for gravel and other salable materials is predicted to yield additional authorizations over the life of the plan. It is anticipated that most demand would be met on state land. Development of future sites would likely be concentrated near projects, highways and roads and be used locally. Even though effects would likely be limited, site-specific measures to protect healthy, functioning watersheds, riparian areas, and associated fish and wildlife habitats, would mitigate impacts on subsistence resources.

Effects from Recreation

Management of recreation areas through recreation setting character (RSC) classes would set the stage for the level of protection or development afforded an area. The size and location of Recreation Management Zones, and therefore RSC settings would change with each alternative and would be reflected in the decisions for travel management and related activities. Impacts to subsistence are discussed under these other resource uses.

Effects from Travel Management

The White Mountains Travel Management Plan decisions, and therefore impacts to subsistence, vary widely across the alternatives. The range of allowed uses includes areas of non-motorized access only, size and weight limits of motorized vehicles, winter cross-country, designated trails, summer cross-country, permits for other uses and combinations of each. Conflicts between user groups, displacement of wildlife, disturbance of wildlife during critical times, and degradation of fish and wildlife habitat are potential impacts from travel management that would affect subsistence resources and use.

For Alternatives B – D, in areas closed to OHV use, federally qualified subsistence users, subject to reasonable regulation and with a free permit, would be able to use snowmobiles or other means of surface transportation while participating in subsistence activities as allowed under ANILCA Section 811 (see section 2.5 ANILCA Access and Use Considerations). The subsistence priority in these areas would be further protected since enforcement would be possible based on possession of a permit. Managers would be able to gain understanding of use and impacts of the use in areas that have been closed to summer OHV for the past three decades from permits issued. Knowledge of use would enhance protection of sensitive subsistence resources and habitats important to those resources.

Obtaining a free use permit for motorized access on BLM-managed lands where access would be limited would not be a significant burden or impact on subsistence users. Assumptions for the analysis of impacts to federally qualified subsistence hunters from the process of getting an access permit are in section 4.2.1.5 of this chapter. The permits would be readily available and free. They would be in addition to the licensing and permitting requirements for all residents who harvest resources in the White Mountains subunit, including hunting, trapping and fishing licenses, registration permits for hunting caribou, and harvest tickets for other hunts or game species. In cases where a federally qualified subsistence user would be a designated hunter for another federally qualified subsistence user, a federal subsistence designated hunter permit would also be required. Licenses, permits and harvest tickets must be carried in the field when harvesting fish and wildlife resources, including the OHV permit.

Travel management decisions for Alternative E are discussed in section 4.7.4.4.2 Alternative E (Proposed RMP).

Effects from Special Designations

Under Alternative B, the White Mountains ACEC would be 589,000 acres and benefit subsistence resources and uses because the designation confers additional protection to Dall sheep habitat and core White Mountains caribou calving and postcalving habitat. The ACEC was developed based on areas known to be valuable to wildlife and the affects would be beneficial to subsistence uses and resources. Although no ACEC is designated in Alternatives C (Map 65) and D (Map 66), similar management would occur on caribou and Dall sheep habitats within Wildlife Conservation Areas to protect these wildlife resources. In Alternative E the area would again be designated as an ACEC and have the same management prescriptions and benefits for subsistence resources and uses as Alternative B, although it would be smaller (417,000 acres).

4.7.4.4.2. Alternative E (Proposed RMP)

Alternative E (Proposed RMP) differs from Alternative C (Draft RMP Preferred Alternative) by the addition of one riparian conservation area, allowing fluid and solid leasable mineral development on 4,000 acres, changing RNAs from closed to motorized vehicles to limited to snowmobile use, lifting prohibition on airboats and hovercraft, and deferral of the Travel Management Plan with adoption of Alternative A (No Action Alternative) as interim management.

Effects from Fish and Aquatic Species

The addition of a riparian conservation area (total 14) would protect and restore fish in watersheds and indirectly wildlife habitat in the White Mountains Subunit to the benefit of subsistence resources and uses. This is the same as Alternative B.

Effects from Leasable Minerals

In Alternative E 4,000 acres would be open to leasable minerals. The lands open are around Livengood. Leasable mineral occurrence and development potential is low in this area. The area has not been identified as critical or important habitat for subsistence resources and no impacts from any mineral development to subsistence resources or uses would be expected.

Effects from Travel Management

In Alternative E travel management would be the same as for Alternative A with the following exceptions. Winter motorized use (snowmobiles) would be allowed in RNAs, UTVs would be allowed on designated trails (section 2.10.2.2.6 Travel Management), use of airboats and hovercraft would be allowed on Beaver Creek WSR, a 1,000 pound curb weight and 50 inches width limitation on snowmobiles would replace the 1,500 pound GVWR limitation, and a 1,000 pound curb weight and 50 inches width limitation on ATVs would replace the 1,500 pound GVWR limitation.

In Alternatives A and E 563,000 acres, including Beaver Creek WSR, would be limited to no summer OHV use. Federally qualified rural residents would also observe this limit on summer OHV use. Interim management in Alternative E differs from Alternative C in that RMZs open to summer OHV would not be limited to designated trails. Although limitation of OHV to designated trails would reduce the benefit of cross-country travel for all users, including federally qualified subsistence users, it would protect habitat and resources important to all users.

Impacts from cross-country use by all users would be expected to increase as described in the assumptions for analysis as population trends are projected to increase and OHV technology continues to advance. Rural hunters frequently have testified at the Eastern Interior RAC meetings that the influx of nonlocal hunters and the impact of that hunting pressure force local hunters to move farther away and hunt in new places (EIRAC 2014). Travel management in Alternative E, like Alternative A, would perpetuate the displacement of local hunters, which would result in higher costs to federal subsistence hunters in lost opportunity and in obtaining wild game. Although impacts would occur they would not be expected to significantly restrict subsistence use or resources in the White Mountains National Recreation Area.

Research Natural Areas (RNAs) are established and maintained for the primary purpose of research and education (43 CFR Part 8200). The areas are to be used in a manner that is nondestructive and consistent with the purpose of the RNA. Winter OHV use with adequate snow cover would generally cause limited impact to soils, vegetation and wildlife habitat. Most of the RNAs are highland areas subject to wind that can result in snow free areas. Some of the RNAs, such as Mount Prindle RNA, are habitat for the White Mountains Dall sheep population and caribou. The RNA is within historic Fortymile caribou calving habitat. Use of snowmobiles in RNAs, which have been selected because of outstanding values, could impact habitat and wildlife populations important to subsistence users especially in low or no snow conditions. Although impacts would occur they would not be expected to significantly restrict subsistence use or resources in the White Mountains National Recreation Area.

As with Alternatives B – D, all users, including federally qualified subsistence users, would be limited to 1,000 pound curb weight and under for snowmobiles and summer OHV. The limit would protect habitat of subsistence resources and benefit users.

Little use of airboats and hovercraft would be expected from the lifting of the prohibition in the Beaver Creek NWR. Launching of boats with motors exceeding 15hp would still be prohibited in the Nome Creek Valley, which would require access to be from the Yukon River and the mouth of Beaver Creek (section 4.2.1.3.8 Travel Management).

4.7.4.4.3. Cumulative Effects

Demand for recreational use is anticipated to increase over the life of the plan as populations in the state increase and technological advancements in recreation equipment occur. Demands for resources important for subsistence would be expected to increase as fish and wildlife resources decline in other portions of the planning area or as opportunities to harvest wildlife and fish resources becomes limited by changing access, allocations or means for recreational hunting and fishing. Conflicts between federally qualified subsistence users and other resource users would increase, which would result in displacement of subsistence users to less familiar and more marginal areas. The cumulative case is developed further in the ANILCA Section 810 evaluation and finding (Appendix J).

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Chapter 5

**Consultation and
Coordination**

5.1. Introduction

This chapter describes public outreach and participation opportunities throughout the development of the Eastern Interior Proposed Resource Management Plan/Final Environmental Impact Statement (Proposed RMP/Final EIS) and coordination and consultation efforts with tribes, government agencies, and other stakeholders. Appendix L lists both comments and the BLM's response to comments.

BLM land use planning activities are in accordance with NEPA requirements, CEQ regulations, and DOI and BLM policies and procedures implementing NEPA. NEPA and associated laws, regulations, and policies require the BLM to seek public involvement early and throughout the planning process to while developing the range of reasonable alternatives and preparing environmental documents that disclose potential impacts of those proposed alternatives. Public involvement and agency consultation and coordination, have been at the heart of the planning process leading to this Proposed RMP/Final EIS and was achieved through *Federal Register* notices, public comments on the Draft RMP/EIS and Supplement to the Draft RMP/EIS, public and informal meetings, government-to-government consultation, individual contacts, media releases, planning newsletters, and the Eastern Interior RMP Website online at: <http://www.blm.gov/ak/eirmp>.

5.2. Public Outreach

Active involvement by the public helps the BLM to ensure that alternatives address the diversity of public interests, build trust between the agency and the public, helps people better understand eventual management decisions and establishes a working relationship through the implementation of those management decisions.

5.2.1. Scoping Process

Scoping is an early and open process designed to determine the extent or scope of issues for the BLM to address in the plan. The BLM initiated scoping for the Eastern Interior Draft RMP/EIS by publishing a Notice of Intent in the *Federal Register* on February 29, 2008. This notice announced the BLM's intent to revise the RMPs for the Steese National Conservation Area and White Mountains NRA, to revise the Fortymile MFP, and to develop an RMP for the Black River area.

The BLM used other opportunities to inform the public about the Eastern Interior scoping process, including flyers and newsletters before and during scoping in October 2007 and April 2008. The Fortymile newsletter also distributed information about the planning process.

The BLM provided information about the planning process to attendees at an exhibit booth at the Fairbanks Winter Trade shows in September 2007 and 2008; and at the Fairbanks Outdoor shows in April 2008 and April 2009. The BLM also notified interested parties about the planning process at regularly scheduled meetings for various special interest groups or advisory councils including the BLM Alaska Resource Advisory Council, the Alaska Miners Association, the Eastern Interior Federal Subsistence Regional Advisory Council, the Yukon River Drainage Fisheries Association, the Upper Black River Working Group, and the Council of Athabascan Tribal Governments meetings and gatherings.

In 2006–2008, the BLM conducted visitor use surveys through the University of Alaska Fairbanks in the White Mountains NRA, Steese National Conservation Area, and along the Taylor Highway. Between October 23 and November 4, 2008, the University hosted three focus group meetings to obtain more input. The results of these studies and meetings helped the BLM to develop a range of recreational opportunities in the planning area.

The Eastern Interior Field Office hosted eight public meetings during the scoping period (Table 5.1, “Public Meetings Held During Scoping”). News releases to local and regional media sources advertised the times and locations of these meetings. Agencies and the public were encouraged to submit oral and/or written comments regarding management of public lands in the planning area. Initially, the formal scoping period was to end on July 1, 2008 (approximately 90 days). The field office later extended the scoping period until August 15, 2008, to ensure adequate time for comment submission. The BLM compiled, reviewed, organized, and analyzed all comments the agency received by the September 22 deadline into the Eastern Interior RMP/EIS Scoping Report (BLM 2008b). In January 2009, the scoping report was posted on the project website. In February 2009, the BLM published and distributed its Eastern Interior RMP newsletter to announce the availability of the scoping report.

Table 5.1. Public Meetings Held During Scoping

Meeting Date	Meeting Location	Number in Attendance
April 10, 2008	Campbell Creek Science Center, Anchorage	11
April 16, 2008	Tok School, Tok	11
April 17, 2008	Delta Junction Community Center, Delta Junction	8
April 22, 2008	Fairbanks North Star Borough Assembly Chambers, Fairbanks	49
May 8, 2008	Red Men Hall, Eagle	11
May 20, 2008	Community Hall, Chalkyitsik	7
May 22, 2008	Steese Roadhouse, Central	9
June 24, 2008	Miner’s Hall, Chicken	16

5.2.2. Website

The BLM established the Eastern Interior RMP website in March 2008. The purpose of this website is to provide the public with information about the planning process, schedule, public meetings, and planning area; to post maps and planning documents when they become available; and, to provide the public with contact information and ongoing status updates on the planning process. The BLM continuously updates the website with information, documents, and announcements. This website can be accessed online at <http://www.blm.gov/ak/eirmp>.

5.2.3. Newsletters and Other Mailings

The BLM maintains and continually updates a mailing list of individuals, businesses, interest groups, and federal, state, tribal, and local government representatives interested in the Eastern Interior RMP/EIS. The mailing list grew from approximately 350 names and addresses during scoping, to 550 currently for the Proposed RMP/Final EIS.

To inform the public, the BLM issued newsletters and other mailings. Between 2009–2015, the BLM published and distributed four issues of the Eastern Interior News. These newsletters announced the availability of the scoping report, Draft RMP/EIS, Supplement to the Draft RMP/EIS, and Proposed RMP/Final EIS. The Fortymile News provided early notification of the

upcoming planning process in 2007 and provided an update to the planning process in 2009. Postcard mailings also announced the times and locations of public meetings.

5.2.4. Other Outreach Efforts

The BLM used other available opportunities to inform the public about the Eastern Interior planning process, such as booths at trade shows and the Alaska Federation of Natives Convention. BLM staff regularly attended scheduled meetings to provide RMP updates for various advisory councils, and tribal, industry, or special interest groups to provide updates on the RMP. BLM staff provided planning updates and solicited comments throughout the planning process at biannual meetings of various advisory councils including the BLM Alaska RAC, Eastern Interior Federal Subsistence Regional Advisory Council, and Citizen's Advisory Commission on Federal Areas.

5.3. Consultation and Coordination

Throughout the planning process, the BLM coordinated and collaborated with key federal, state, and local agencies. Members of the planning team also consulted both formally or informally with numerous agencies, groups, and individuals. Consultation, coordination, and public involvement also occurred due to meetings, briefings, and updates on , the Draft RMP/EIS and Supplement to the Draft RMP/EIS and public scoping, with Section 810 subsistence hearings, State of Alaska, USFWS, tribal or local government, interest groups, and through individual contacts.

Cooperating agency status provides a formal framework for governmental agencies to actively collaborate with a federal agency to implement NEPA (42 U.S.C. 4321, et seq.) NEPA requirements. State agencies or local and tribal governments may qualify as cooperating agencies because of "jurisdiction by law or special expertise" (40 CFR 1501.6 and 1508.5). The State of Alaska, the Gwichyaa Zhee Gwich'in Tribal Government, and Chalkyitsik Village Tribal Government are cooperating agencies for the RMP/EIS. The BLM is also working closely with the Yukon Flats National Wildlife Refuge, but the Refuge is not in a formal cooperating agency status for this planning process.

The Proposed RMP/Final EIS is consistent with plans and policies of other relevant jurisdictions to the maximum extent possible and consistent with the purposes, policies, and programs of federal laws and regulations applicable to public lands (such as FLPMA).

5.3.1. Tribes

In recognition of the government-to-government relationship between tribes and the federal government, the BLM contacted the federally recognized tribes listed below in 2008 about the planning process and to initiate government-to-government consultation. The BLM invited tribal representatives to the public scoping meetings held in the planning area during the spring of 2008. Tribes were again contacted to participate near the end of the scoping period.

1. Beaver Village
2. Birch Creek Tribe
3. Chalkyitsik Village
4. Circle Native Community
5. Gwichyaa Zhee Gwich'in Tribe (formerly Native Village of Fort Yukon)
6. Healy Lake Village

7. Native Village of Eagle
8. Native Village of Stevens
9. Native Village of Tanacross
10. Native Village of Tetlin
11. Northway Village
12. Village of Dot Lake

Early in the planning process when initiating government-to-government consultation, the BLM initially invited all federally recognized tribes in the planning area to become cooperating agencies. Out of those tribes, only the Gwichyaa Zhee Gwich'in and Chalkyitsik Village tribal governments followed up and developed memoranda of understanding with the BLM.

During scoping, the BLM also sent letters requesting input on issues and concerns to Doyon, Limited, the Tanana Chiefs Conference, and Alaska Native corporations. On May 14, 2008, the BLM briefed the Council of Athabascan Tribal Governments on the Draft RMP/EIS at their Fort Yukon meeting. The BLM invited tribal leaders attending this meeting to participate in the planning process through government-to-government consultation. The BLM also offered to hold scoping meetings in any villages upon request by the tribes.

The BLM held a listening session during the Alaska Federation of Natives meeting in Anchorage on October 22, 2008. The Fairbanks District Manager spoke with the various tribal chairs about the Eastern Interior RMP/EIS and cooperating agency options.

In February 2012, the BLM again contacted and provided copies to tribes, native organizations, and native corporations when the agency released the Draft RMP/EIS for public comment. The BLM held public meetings on the Draft RMP/EIS in Birch Creek, Circle, Central, Chalkyitsik, Chicken, Eagle, Fort Yukon, Fairbanks, and Anchorage in April and May 2012. Section 810 subsistence hearings were held in conjunction with these public meetings in Birch Creek, Circle, Chalkyitsik, Eagle, and Fort Yukon.

When the BLM released a Supplement to the Draft RMP/EIS in January 2013, the tribes, native organizations, and native corporations were once again contacted and provided a copy of the Supplement. In March 2013, the BLM held public meetings to take comments on both the Supplement and the Draft RMP/EIS in Anchorage, Chalkyitsik, Eagle, Fairbanks, and Fort Yukon, again with Section 810 subsistence hearings held in conjunction with these public meetings in all communities except Anchorage.

Consultation with Chalkyitsik Village

On May 20, 2008, the BLM held a scoping meeting in the village of Chalkyitsik at the request of the Chalkyitsik Tribal Government. On November 18, 2008, the BLM consulted with tribal representatives on a government-to-government basis to discuss cooperating agency status and to develop a formal agreement on how to conduct government-to-government consultation for the planning process. At that time, Chalkyitsik decided not to become a cooperating agency and the draft memorandum of understanding was not finalized.

The BLM held two public meetings in Chalkyitsik in 2012 and 2013. The BLM Fairbanks District Manager and Deputy State Director for Resources visited Chalkyitsik in June 2013 and took a river trip up the Black River with tribal representatives.

In September 2014, the BLM established a memorandum of understanding with Chalkyitsik Village. This agreement formalized the government-to-government consultation process and gave the tribe cooperating agency status. Under this agreement, Chalkyitsik Village reviewed and provided comments on the Preliminary Proposed RMP/Final EIS. The village submitted their comments in a package with the Gwichyaa Zhee Gwich'in, as summarized below. In a February 25, 2015, teleconference, the BLM consulted with the tribe about their comments on the Preliminary Proposed RMP/Final EIS. We again consulted with the tribe March 21, 2016.

Consultation with Gwichyaa Zhee Gwich'in

On July 8, 2011, the BLM consulted with the Gwichyaa Zhee Gwich'in Tribal Government to discuss a memorandum of understanding on how to conduct government-to-government consultation during the planning process. The memorandum of understanding was approved in October 2011 and amended on September 19, 2014, to provide cooperating agency status. Additionally, the BLM also consulted with the Gwichyaa Zhee Gwich'in Tribal Government on May 22, 2012, March 6, 2013, June 24, 2014, January 13, 2015, June 2, 2015, March 16, 2016 and April 7, 2016.

At the May 2012 consultation meeting, the Gwichyaa Zhee Gwich'in Tribal Government formally requested or commented. The BLM responded to these requests in writing on August 12, 2012 (see Appendix L3.1.). These requests and comments from the Gwichyaa Zhee Gwich'in Tribe include:

- Support Alternative B of the Draft RMP/EIS.
- Designate the Upper Black, Kandik, Salmon, Grayling and Wood rivers as wild and scenic rivers.
- Retain all ANCSA 17(d)(1) withdrawals in the Upper Black River Subunit until further study is done.
- Conduct cultural and biological documentation/research before removing any withdrawals and opening areas to mining.
- Continue to consult with the Gwichyaa Zhee Gwich'in Tribal Government.
- Provide a written response on why the Draft RMP/EIS identified a preferred alternative (before public comment period).
- Allow the Gwichyaa Zhee Gwich'in Tribe be a signatory and participate on any working group for any future environmental impact assessment in the Eastern Interior region.
- Allow the Gwichyaa Zhee Gwich'in Tribe be part of the Record of Decision working group for the Eastern Interior RMP/EIS.
- Designate the entire Upper Black River Subunit as an area of critical environmental concern (ACEC). The cultural/fish values of the Upper Black River are substantial and of more than local importance.
- Provide a copy of the Draft RMP/EIS to the Gwich'in in Canada for comment.
- Reconsider the Section 810 finding of no significant restriction in the Upper Black River subunit.
- Schedule a meeting between the BLM Alaska State Director and the Gwichyaa Zhee Gwich'in Tribal Government.
- Enter all tribal government comments and questions into the official record for the RMP/EIS.

Concerns of Chalkyitsik Village and Gwichyaa Zhee Gwich'in Tribal Governments

The BLM provided the Gwichyaa Zhee Gwich'in and Chalkyitsik Village tribal governments copies of the preliminary alternatives for the Proposed RMP/Final EIS for their review in October 2014. The two tribes submitted joint comments to the BLM in January 2015 and again in April and May 2016. Major concerns from their comment letters are listed below. The BLM response to their comments is included in Appendix L.3.1

1. Tribal consultation was inadequate.
2. Unsupported finding of no significant impact on subsistence. Failure to provide ANILCA Section 810 hearing and make Section 810(a) determinations concerning impacts on subsistence.
3. Lack of clarity in narrative text and maps regarding withdrawals accompanying State-selected and Native-selected lands.
4. Premature decisions relating to ANCSA withdrawals and mineral development without knowing which of the selected lands will be conveyed or how State and Native entities will use the conveyed lands.
5. Geographic scope of proposed Salmon Fork ACEC is too small. ACEC designation should include entire upper Black River watershed. The ACEC decision fails to take into account traditional and local knowledge regarding fish, wildlife, subsistence, historic, and cultural resources.
6. Several important watersheds, including the mainstem Black River, Grayling Fork, Bull Creek, Wood River and their tributaries are not included in RCA designations. Additional traditional knowledge provided in support of Bull Creek RCA.
7. Allowing locatable and leasable mineral development outside of the Salmon Fork ACEC and RCAs would result in excessive degradation.
8. Tribes support the proposal to allow personal use of timber throughout subunit. Allowing commercial timber sales, however, is inconsistent with RCA designations and would allow excessive degradation. Allowing commercial salvage logging and forest products throughout entire subunit would allow excessive degradation.
9. Allowing gravel mining and other salable mineral development throughout entire subunit is inconsistent with ACEC and RCA designations and would allow excessive degradation.
10. Allowing road corridors poses threat of direct impacts as well as indirect impacts due to facilitation of mining and other extractive development. Right-of-way avoidance areas should be established.
11. The BLM deemed Salmon Fork eligible and suitable and tentatively classified it as "wild." The Draft RMP/EIS does not provide a good reason not to recommend its designation as a wild and scenic river in the preferred alternative.

12. The BLM has declined to recommend Black River and its tributaries for designation under Wild and Scenic Rivers Act based on inadequate data, especially through failure to gather adequate traditional and local knowledge.
13. Proposed management standards relating to preservation of wilderness are weak and allow too much degradation

The BLM discussed the comments listed above with the Chalkyitsik Village tribal representatives by teleconference on February 24, 2015 and with the Gwichyaa Zhee Gwich'in tribal representatives in person on June 2, 2015. BLM engaged in additional government-to-government consultation on the Proposed RMP with both tribes in April and May 2016. As a result of this government-to-government consultation, the Proposed RMP recommends retaining ANCSA withdrawals in the Salmon Fork ACEC, RCAs, and the Black River watershed until new FLPMA withdrawals from the mining laws can be enacted. Additionally the RMP would close these areas to the mineral leasing laws.

Consultation with Native Corporations

The BLM notified Alaska Native corporations with lands within the planning area of the planning process and included them in mailings regarding the RMP/EIS, including distribution of the scoping report, Draft RMP/EIS, Supplement to the Draft RMP/EIS, and Proposed RMP/Final EIS. Several corporations participated in the process by submitting comments during public comment periods.

Cook Inlet Regional Native Corporation contacted the BLM in early 2015 with comments on proposed ACECs in the Fortymile Subunit. The BLM sent Cook Inlet a letter on March 11, 2015, initiating consultation and offering to meet with the corporation, but did not receive a response.

The Doyon, Limited Regional Native Corporation provided comments on the Draft RMP/EIS, Supplement to the Draft RMP/EIS, and proposed areas of critical environmental concern. The BLM consulted with Doyon, Limited on May 12, 2015, on their comments.

5.3.2. Local Governments

The BLM contacted the Fairbanks North Star Borough during scoping and invited the Borough to become a cooperating agency because the planning area includes the eastern half of the borough. There are very few BLM-managed lands within the borough, however, and no cooperating agency relationship was established. Notice of the Draft RMP/EIS and Supplement to the Draft were provided to the Borough Planning Department and the cities of Fairbanks, North Pole, and Delta Junction. The Borough and the City of North Pole commented on the Draft RMP/EIS. Comment response is included in Appendix L.

5.3.3. State Agencies

With the high percentage of State lands within the planning area, the BLM has involved the State of Alaska from the beginning of this planning process. A staff position was created at the Alaska Department of Natural Resources (ADNR), to serve as a liaison between the State of Alaska and the BLM. This approach has worked effectively in facilitating information exchanges and reviews of draft materials by state personnel. The ADNR acts as a state clearinghouse for the BLM by soliciting and coordinating planning input from 15 state agencies, including the Alaskan

State Historic Preservation Office. In addition, the ADNR provides technical and consistency reviews of draft documents. The State has both reviewed and provided comments on BLM's draft alternatives, preliminary Draft RMP/EIS, the public Draft RMP/EIS, the Supplement to the Draft RMP/EIS, and the preliminary Proposed RMP/Final EIS. On several occasions, the BLM Eastern Interior Field Office met with ADNR to discuss state comments and concerns.

Initial coordination with the State is through an Interagency Agreement. In March 2014 the agencies developed a memorandum of understanding, identifying the State as a cooperating agency.

5.3.4. Federal Agencies

Consultations with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) is required under Section 7 of the Endangered Species Act (ESA), prior to initiation of any project by the BLM that may affect any federally listed or endangered species or its habitat. This RMP/EIS is considered to be a major federal project and thus consultation is required.

The BLM initiated informal consultation with the USFWS in 2008. The USFWS concluded that there were no listed species in the planning area and that further consultation under Section 7 of the ESA is not necessary at this time (USFWS 2008d).

In 2011, the BLM consulted with the Yukon Flats National Wildlife Refuge for input into the preliminary Draft RMP/EIS. Upon release of the Draft RMP/EIS the BLM provided a briefing to the USFWS. The USFWS submitted comments on the Draft RMP/EIS during the public comment period.

The NMFS is responsible for the administration of the Endangered Species Act as it applies to listed cetaceans and pinnipeds in Alaska, including seven species of whales and Steller sea lions. The BLM requested a species list from NMFS on March 24, 2008. Since the planning area does not include any coastal areas and is located several hundred miles inland, there are no listed species.

5.3.5. Interest Groups and Advisory Councils

The BLM Alaska Resource Advisory Council (RAC) is an advisory panel that provides advice and recommendations to the BLM on resource and land management issues in Alaska. Membership includes Alaskans from around the state who represent the energy industry, tourism, commercial recreation, environmental interests, archaeological interests, elected officials, Alaska Native organizations, and the public-at-large. The RAC was briefed on the RMP/EIS progress at their quarterly meetings from 2007 to present.

The Eastern Interior Federal Subsistence Regional Advisory Council (Regional Council) provides advice and recommendations to the Federal Subsistence Board about subsistence hunting, trapping, and fishing issues on federally managed public lands. The BLM updated the Regional Council on the status of the RMP/EIS at their semi-annual meetings throughout the entire planning process. The Regional Council submitted written comments on the Draft RMP/EIS.

The Citizen's Advisory Commission on Federal Areas-Alaska is an advisory group to the Governor of Alaska. The commission was initially created after passage of ANILCA in 1980

and operated until 1999, when state funding was eliminated. In 2007, the Commission was reestablished by House Bill 87. The Commission is responsible for identifying potential negative impacts on Alaska and its citizens from federal actions on federal lands. Citizen appointees must represent the diversity of users and uses of federal lands in Alaska. The BLM briefed the Commission on the status of the RMP/EIS at their regularly scheduled meetings. The Commission provided oral comments at meetings and written comments on the Draft RMP/EIS.

Several interest groups and individuals formed an Upper Black River Working Group to provide comments and oversee progress on the Eastern Interior RMP/EIS. The BLM met with this group and briefed them on the status of the RMP in February 2009 and January 2010.

The BLM also periodically updated the Fortymile Miners Association and the Alaska Miners Association at their regular meetings. The Alaska Miners Association provided written comments on the Draft RMP/EIS.

5.4. Distribution and Availability of the Draft RMP/EIS

5.4.1. Draft RMP/EIS

Public comment on the Eastern Interior Draft RMP/EIS was initiated on March 2, 2012, when the Notice of Availability published in the *Federal Register*. The notice announced the availability of the Draft RMP/EIS for public review and comment. The initial public review period was set for 150 days. This review period was later extended pending release of a supplement to the Draft RMP/EIS. The public comment period on the Draft RMP remained open until April 11, 2013, for an approximate 13-month comment period.

Upon publication of the Notice of Availability, the BLM made the Draft RMP/EIS available on the Eastern Interior website in two formats (Adobe PDF and an interactive document). The document was also available on CD or in printed form upon request. Printed and CD copies were mailed to all tribal governments and Native corporations. The BLM notified approximately 400 individuals and interest groups on the mailing list of the availability of the Draft RMP/EIS via a newsletter. A media release was also issued and distributed to a statewide media group.

BLM staff also presented information on the Draft RMP/EIS to various groups including the Alaska Congressional delegation, Alaska Miners Association, Citizen's Advisory Commission on Federal Areas, BLM Alaska Resource Advisory Council, Eastern Interior Regional Advisory Council, Fairbanks Chamber of Commerce, and U.S. Fish and Wildlife Service.

The Eastern Interior Field Office hosted 13 public meetings for the Draft RMP/EIS. News releases to local and regional media sources advertised the times and locations of these meetings. Agencies and the public were encouraged to submit oral and/or written comments regarding management of public lands in the planning area.

Table 5.2. Public Meetings Held on the Draft RMP/EIS

Meeting Date	Meeting Location	Number in Attendance
April 9, 2012	Morris Thompson Cultural Center, Fairbanks	53
April 11, 2012	Tribal Hall, Fort Yukon	27
April 16, 2012	Circle Community Hall, Circle	4
April 23, 2012	Eagle School, Eagle	8
April 24, 2012	Tribal Hall, Eagle Village	14
May 7, 2012	Mining Museum, Central	6
May 9, 2012	Campbell Creek Science Center, Anchorage	13
May 16, 2012	Tok School, Tok	10
May 17, 2012	Delta Junction Community Center, Delta Junction	6
May 29, 2012	Community Hall, Chalkyitsik	9
May 31, 2012	Post Office, Birch Creek	5
June 1, 2012	Miner's Hall, Chicken	
November 19, 2012	Tok School, Tok	5

5.4.2. Supplement to the Draft RMP/EIS

Public comment on the Hardrock Mineral Leasing in the White Mountains National Recreation Area, Supplement to the Eastern Interior Draft RMP/EIS (Supplement) was initiated with a Notice of Availability published in the *Federal Register* on January 11, 2013. This notice announced the availability of the Supplement for public review and comment. The purpose of the Supplement was to analyze and obtain public comment on opening part of the White Mountains National Recreation Area to a hardrock mineral leasing program. The public comment period on the Supplement closed April 11, 2013.

Upon publication of the Notice of Availability, the BLM made the Supplement available on the BLM Eastern Interior RMP website in two formats: Adobe PDF and an interactive document. The document was available on CD or in printed form upon request. Printed and CD copies were mailed to all tribal governments. The field office sent out a post card mailing and newsletter to notify approximately 500 individuals and interest groups on the mailing list about the availability of the Draft RMP/EIS. The BLM also issued a media release and distributed it to a statewide media group.

The Eastern Interior Field Office hosted six additional public meetings during the public comment period for the Supplement. News releases to local and regional media sources advertised the times and locations of these meetings. Agencies and the public were encouraged to submit oral and/or written comments regarding management of public lands in the planning area.

Table 5.3. Public Meetings Held on the Supplement to the Draft RMP/EIS

Meeting Date	Meeting Location	Number in Attendance
February 13, 2013	Morris Thompson Cultural Center, Fairbanks	95
February 19, 2013	Campbell Creek Science Center, Anchorage	12
March 5, 2013	Morris Thompson Cultural Center, Fairbanks	50
March 6, 2013	Tribal Hall, Fort Yukon, Government-to-Government Consultation	31
March 11, 2013	Eagle School, Eagle	4
March 12, 2013	Tribal Hall, Eagle Village	3
March 19, 2013	Community Hall, Chalkyitsik	22

5.4.3. Areas of Critical Environmental Concern

BLM planning regulations require the BLM to notify the public of proposed Areas of Critical Environmental Concern (ACECs) and specify the resource use limitations that would occur if the ACECs were formally designated. Based on public comment on the Draft RMP/EIS, the BLM considered changing the boundary of the proposed Fortymile ACEC and designating a new ACEC on the Mosquito Flats, also in the Fortymile region. These specific proposed ACEC boundaries were not considered in the Draft RMP/EIS. Thus, the BLM published an additional notice in the *Federal Register* on January 2, 2015, to provide a 60-day public comment period for these two proposed ACECs.

The BLM posted a summary document describing the two ACECs on the project website on January 2, 2015. A news release to the local and regional media advertised the availability of this additional information on ACECs and the 60-day public comment period. The BLM mailed a postcard to the RMP/EIS mailing list with information on how to comment on the ACECs. The BLM considered these public comments on the proposed ACECs when formulating Alternative E of the Proposed RMP and summarized the comments in Appendix L.

5.5. Summary of Comments

The BLM received more than 590 comment submissions from organizations, government agencies, tribes, and individuals during the various comment periods. In addition the BLM received approximately 22,400 form letters generated by several organizations. Because of the duplicative nature of these form letter submissions, each of the six unique form letters represent only one comment submission. Most of the written submissions contained multiple comments on different topics. Information the BLM received through these comments has been evaluated, verified, and incorporated into the Proposed RMP/Final EIS, as appropriate.

The BLM compiled and summarized all public comments on the Draft RMP/EIS, the Supplement, and the ACEC notification. Appendix L documents public comments and responses.

5.6. Distribution and Availability of the Proposed RMP/Final EIS

The BLM notified all entities (approximately 500) on the RMP/EIS mailing list of the availability of the Proposed RMP/Final EIS. Copies of the Proposed RMP/Final EIS are available for public inspection at the following locations:

- BLM Fairbanks District Office, Fairbanks, Alaska
- BLM Alaska State Office, Public Room, Anchorage, Alaska

The Proposed RMP/Final EIS is available electronically online at <https://www.blm.gov/ak/eirmp>. Paper or CD copies of the Proposed RMP/Final EIS have been distributed to the organizations, agencies, and individuals who requested them, or as required by regulation or policy.

Concurrent with the distribution of the Proposed RMP/Final EIS, a Notice of Availability is published by the Environmental Protection Agency in the *Federal Register*, marking the beginning of the protest period. The BLM also published a Notice of Availability in the *Federal Register* announcing the availability of the Proposed RMP/Final EIS for protest and governor's consistency review. A news release issued and distributed to a statewide media group announced the availability of the Proposed RMP/Final EIS.

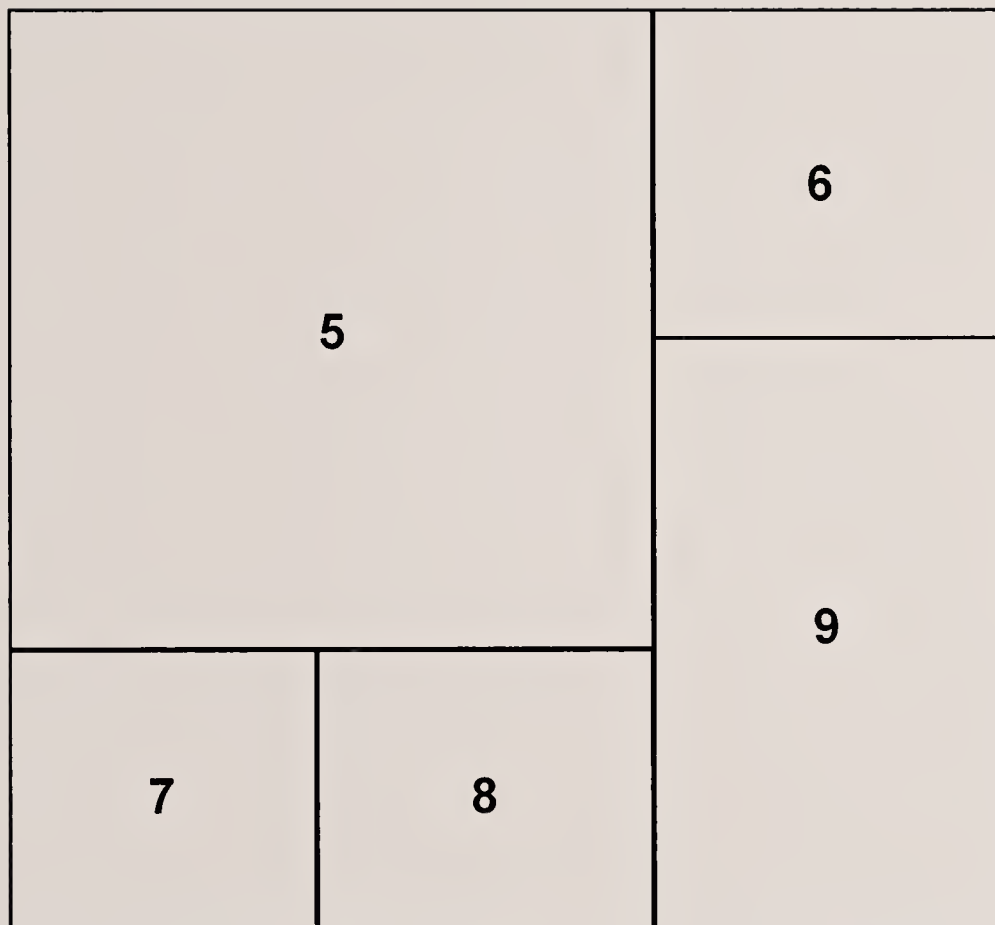
5.7. List of Preparers

The Eastern Interior Proposed RMP/Final EIS was prepared by an interdisciplinary team of specialists from the Eastern Interior Field Office and the BLM Alaska State Office. Technical review and support were provided by the State of Alaska, U.S. Fish and Wildlife Service, BLM Fairbanks District Office, BLM Alaska State Office, and BLM Washington Office.

Table 5.4. List of Preparers of the Eastern Interior Proposed RMP/Final EIS

Name	Area of Responsibility	Participation
Rob Brumbaugh	Mineral Potential Reports, RFD, Leasable Minerals	Author
Jeanie Cole	RNAs, Renewable Energy, Grazing, Purpose and Need, Consultation and Coordination	Project Lead, Author
Collin Cogley	Forestry, Recreation White Mountains, and Beaver Creek Wild and Scenic River	Author
Kevan Cooper	Fortymile River, Realty	Author, Reviewer
Tom Coulter	Air Resources and Climate Change	Author, Reviewer
Tim Dupont	Cave and Karst Resources	Author
Chel Ethun	Recreation, Wilderness Characteristics	Reviewer, Supervisor
Michael Gibson	Minerals, Lands and Realty	Reviewer, Supervisor
Rob Ellefson	Sand and Gravel	Author, Reviewer
Ruth Gronquist	Subsistence and Non-native Invasive Species	Author
Lenore Heppler	Field Office Manager	Oversight, Supervisor
Jim Herriges	Wildlife, Special Status Species and Vegetation	Author
Rebecca Hile	Hazardous Materials and Abandoned Mine Lands	Author
John Hoppe	Mineral Potential Reports, Locatable and Salable Minerals	Author
Mike Kasterin	Economics and Environmental Justice	Author
Ben Kennedy	Soil, Water and Air Resources, Climate	Author
Karen J. Laubenstein	Editor	Editing and publishing
Dave Maxwell	Air Resources and Climate Change	Author, Reviewer
Craig McCaa	Public Affairs	Editing, public outreach
Holli McClain	Recreation and Travel Management Steese, Wild and Scenic Rivers, Visual Resource Management and Wilderness Characteristics	Author
Stacie McIntosh	Environmental Justice	Author
Robin Mills	Cultural and Paleontological Resources	Author
Craig Nicholls	Air Resources and Climate Change	Reviewer
Darla Pindell	Social Systems	Author
Jason Post	Fish and Special Status Fish	Author
Tom St. Clair	Wildland Fire Ecology and Management	Author
Serena Sweet	Planning and Environmental Coordinator, Alaska State Office	Reviewer
Skip Theisen	Wildland Fire Ecology and Management	Author
Matt Varner	Fish and Aquatic Species, Watershed Inventory	Author, Reviewer
Victor Wallace	Realty and Land Tenure, Withdrawals	Author
Eric Yeager	Recreation and Travel Management, White Mountains	Author

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BLM Back Cover Photos:

- 5. Two caribou bulls running, Steese National Conservation Area, Alaska.
- 6. Checking set net near the village of Fort Yukon, Alaska. Photo by Alaska Department of Fish and Game.
- 7. Arctic Grayling fish assessment, Preacher Creek, Alaska
- 8. OHV rider on the Quartz Creek Trail, White Mountains National Recreation Area, Alaska.
- 9. Sled dogs at Caribou Bluff Cabin, White Mountains National Recreation Area, Alaska.

